

**UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF PENNSYLVANIA**

ASHLEY POPA, individually and on behalf
of all others similarly situated,

Plaintiff,

v.

HARRIET CARTER GIFTS, INC., a
Pennsylvania corporation, and NAVISTONE,
INC., a Delaware corporation,

Defendants.

Case No. 2:19-cv-00450-WSS

APPENDIX TO DEFENDANTS' CONCISE STATEMENT OF MATERIAL FACTS

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EXHIBIT 1

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DECLARATION OF LARRY KAVANAGH

Pursuant to 28 U.S.C. § 1746, I, Larry Kavanagh, declare and state as follows:

1. I am over the age of eighteen and competent to make this declaration. I make this declaration based on my personal knowledge and, if called as a witness, I could and would testify to competently to the matters stated herein.

2. I am the chief executive officer and president of Defendant NaviStone, Inc. (“NaviStone”); I have held this position since NaviStone’s founding in April 2016.

3. My duties in these positions include setting the company’s operating priorities and principles, understanding and promoting the company’s services, and making decisions for the company as part of an experienced management team. Performing this work for NaviStone requires me to be very familiar with NaviStone’s product offerings and how they work. This includes having a working knowledge of NaviStone’s JavaScript code at issue in this lawsuit, the components of the services which NaviStone’s offers to its clients, the activities of and services provided by the companies that assist NaviStone in providing those services, and details concerning digital and direct mail marketing programs, tools, and solutions that are available in the U.S. market. My knowledge derives not only from my work for NaviStone, but for seventeen

years of work before that in providing marketing services and consulting to the direct marketing industry, including online service providers and sellers. A copy of my latest CV is attached as **Exhibit A**.

4. Unless indicated otherwise, the information contained in this declaration is based upon my personal knowledge.

5. In this declaration, and for ease of communication, some statements in this declaration concerning NaviStone's work for Defendant Harriet Carter Gifts, Inc. ("Harriet Carter") are stated in the present tense. However, it is important to note that the only services NaviStone provided to Harriet Carter occurred in 2016 (a single promotional mailing), and that all transmissions to NaviStone from web browser instances visiting the Harriet Carter website ended by no later than October 31, 2018.¹

OVERVIEW OF NAVISTONE'S SERVICES

6. NaviStone is a small marketing technology company with fewer than 30 employees located in Cincinnati, Ohio. It has clients located across the United States which operate websites serving a national marketplace.

7. In September 2016, NaviStone entered into a written agreement with Harriet Carter. A copy of the Harriet Carter agreement (the "Agreement") is attached as **Exhibit B**.

8. The Services help NaviStone clients, primarily e-commerce retailers, send postcards or other direct mail promotions to people who visit their websites and demonstrate some interest in their products, but then leave the website without making a purchase (the "Services"). The system it offers for doing so was built from the ground up to protect the anonymity of those

¹As explained below, Harriet Carter had to install certain JavaScript code on its website pages to obtain services from NaviStone. Transmissions from the pages of Harriet Carter's website continued to occur beyond 2016 because the code remained on its website even after it stopped using the Services. As with all its clients, NaviStone had no ability to add or remove code from Harriet Carter's website..

visitors who do not provide their names and addresses to NaviStone's clients. Moreover, the data sent to NaviStone's servers in connection with providing the Services is for the exclusive benefit of each client, never combined with other clients' data, and never disclosed to anyone outside of NaviStone. In order to provide the Services, NaviStone worked with Harriet Carter to develop customized JavaScript code that would permit the pages of Harriet Carter's website to instruct the visitor's web browser to send information directly to NaviStone. Harriet Carter then installed the code on the individual pages of its website from which it would send information to NaviStone. Once installed, the code ran when the pages of the Harriet Carter website were fully loaded in a website visitor's web browsing software, and stopped running when a visitor navigated to a new web page.

9. NaviStone considers itself to be acting on behalf of and under the authority of each of its individual clients to which it provides the Services. For example, in the case of Harriet Carter, it obtains and uses data from Harriet Carter's website solely for providing Services to Harriet Carter. It never combines Harriet Carter's data with the data any other clients. The Agreement specifically provides that, "[u]pon termination or expiration of the Agreement, NaviStone® will archive all Client Data on NaviStone's cloud servers for a period of thirty (30) days prior to deleting all Client Data in its possession." (**Exhibit B**, p. 2).²

10. From its founding, NaviStone has sought to protect the privacy of consumer information and preserve the anonymity of website visitors in connection with the Services. This commitment is described on NaviStone's website at www.navistone.com/consumer-privacy-0. A copy of this privacy commitment is attached as **Exhibit C**. While this page was last updated on October 3, 2019, to address concerns relating to the recently enacted California Consumer Privacy

²Because of this ongoing litigation, NaviStone cannot delete Harriet Carter's Client Data, but it intends to do so as soon once the obligation to preserve that data has ended.

Act and the European privacy directive commonly known as the GDPR, NaviStone's has always adhered to these core consumer privacy principles in providing the Services.

11. In service of these important aims, NaviStone never takes possession of or otherwise learns (or seeks to learn) the names and mailing addresses associated with anonymous browser visits to its clients' websites. Nor are those names and addresses revealed to any of its clients.

12. The restrictions set forth in this declaration, and in Paragraph 11 in particular, exist solely for the purpose of protecting consumer privacy. NaviStone's ability to maintain consumer anonymity has been a critical factor in its adoption by companies like Harriet Carter who share NaviStone's commitment to consumer privacy. To this end, the Agreement requires Harriet Carter (like all NaviStone clients) to warrant that it is "in full compliance with all applicable laws and marketing regulations regarding the privacy of its customers and the collection, use and disclosures of its customer information." (**Exhibit B**, p. 3). It also obligates NaviStone not to disclose Client Data to any third party "except as reasonably required for NaviStone to provide its obligations under this Agreement or as required by law or court order." (**Exhibit B**, p. 2). The Agreement further requires clients to publish via "a clear and conspicuous link" a privacy policy that explains to consumers information collection and disclosure practices associated with the provision of the Services, and to provide a clear and easy to use means for opting out of direct mail promotions. (**Exhibit B**, pp. 3-4). Harriet Carter complied with this requirement.

13. NaviStone is able to keep consumer names and address private through the use of a commonly used online process called "cookie syncing," which is described accurately and in greater detail in the declaration of Chris Ludwig. NaviStone's data contractor with which it cookie syncs, Neustar, Inc. ("Neustar") (www.home.neustar), has its own database of names and mailing addresses. In connection with the cookie syncing process, Neustar never discloses any of those names and addresses to NaviStone or its clients, including Harriet Carter. To achieve this,

NaviStone sends to Neustar a selected list of anonymous NaviStone cookie IDs to which Neustar has previously “synced” to its own cookie IDs. Neustar then produces a list of mailing addresses associated with the cookies it has synced, and sends this list directly (and solely) to American Computer Group d/b/a Computech (“Computech”) (www.acg-computech-direct.com), a service bureau retained by NaviStone to manage and keep confidential the mailing lists for NaviStone’s Services.

14. It is important to note that Neustar is never informed of the identity of the NaviStone client to which these anonymous cookie IDs relate. Thus, for a Harriet Carter mailing, Neustar receives Harriet Carter-specific cookie IDs from NaviStone during the syncing process, but is not told that those cookies are set on behalf of Harriet Carter or in any way associated with Harriet Carter, nor is Neustar advised that any subsequent promotional mailing will be on behalf of Harriet Carter. Nor is Neustar ever provided any of the visitor browsing data associated with these anonymous IDs. In this way, cookie syncing insures that no one party has both visitor browsing data (including the website visited) and any correlated or associated names and addresses. NaviStone, for its part, never shares browsing data with anyone.

15. After receiving a list of mailing addresses from Neustar for Harriet Carter, Computech replaces the names on the Neustar mailing address list with names of the most active shoppers associated with those mailing addresses, which information is provided by, KBM Group, Inc. (“KBM Group”) (www.kbmg.com), another vendor retained by NaviStone. NaviStone does this because it has no way to know whether names provided by Neustar to Computech are the actual persons who browsed the Harriet Carter website, and because using the name of the most active shopper at the address synced by Neustar increases response rates for - direct mail.

16. To ensure that consumer wishes are respected, Computech removes from the list the names and addresses of persons who appear on client-specific and national “do not mail” lists, as described in greater detail below.

17. NaviStone provided its Services to Harriet Carter once. This mailing took place in 2016. For this mailing, Computech sent the list to a third party processing company called Cross Country Computer for inclusion in a larger mailing. Harriet Carter never again requested that NaviStone perform any Services on its behalf.

**THE LIMITED PERIOD WHEN CERTAIN FORM FIELD
INFORMATION WAS TRANSMITTED TO NAVISTONE**

18. On June 20, 2017, NaviStone turned off a part of its JavaScript code which had caused certain information entered into in form fields to be sent to its servers. The part of the code which caused this to happen was left over from an experiment that NaviStone had briefly conducted in 2016. When NaviStone learned that privacy concerns were being raised about this practice in June of 2017—from the web publication *Gizmodo*—it immediately terminated it.

19. The pre-June 20, 2017 transmission activity happened after the web page being visited was fully rendered in the visitor’s browser and was specifically programmed to prevent sensitive data (like credit card or account numbers and passwords) from being sent to NaviStone. It occurred when a visitor had completed typing in a field and then “tabbed out” of that field. On tabbing out, the information in the form field was sent directly by the visitor’s web browser to NaviStone, but to no one else. At no time, before or after June 20, 2017, was NaviStone “keystroke logging” in or in any way collecting or sending keystroke information to its servers, as alleged by Plaintiff.

20. Even for periods prior to June 20, 2017, NaviStone never used the specific data from any form fields to provide the Services and did not share that information with anyone.

21. Contrary to Plaintiff’s claims, NaviStone never used form field information that was transmitted prior to June 20, 2017 to figure out the identity and/or address of anonymous visitors to its clients’ websites or to create a database of names and addresses for use in providing the Services.

22. Because NaviStone never used content of any form field information that was transmitted, the termination of this activity had no effect on NaviStone's Services and was consistent with NaviStone's commitment to consumer privacy.

23. NaviStone's software never caused form field information to be sent to it when a visitor clicked a "complete" or "submit" button (or any other button connoting a transmission from the browser to the website server), but *only* when a website visitor exited out of specific fields.

24. My understanding is that Plaintiff only browsed the Harriet Carter website in the spring of 2018. As explained above, the transmission of form field information upon "tabbing out" of a field ended in June of 2017.

THE FTC INVESTIGATION

25. NaviStone was mentioned in two articles published on the technology website, Gizmodo, on June 19, 2017, and June 20, 2017. Those articles led the FTC to commence an investigation of NaviStone's privacy practices.

26. On September 8, 2017, NaviStone submitted a letter to the Federal Trade Commission describing the nature of its Services in detail. The information contained in that letter accurately describes NaviStone's Services, and a copy of that letter (the "FTC letter") and its attachments are attached as **Exhibit D**. In November of 2017, NaviStone was advised that the investigation had been closed. The FTC neither recommended nor required any changes to NaviStone's Services.

NO SHARING OF INFORMATION BETWEEN CLIENTS

27. As explained above, in providing the Services, NaviStone uses only data sent to it by Harriet Carter's web pages to create a score for Harriet Carter's visitors.

28. No data is shared between or among NaviStone's clients. No other client derives any use or obtains any benefit from Harriet Carter's data, and Harriet Carter does not derive any

use or obtains any benefit from other clients' data. NaviStone never combines its clients' data for any purpose whatsoever, and it does not use its clients' data for any purposes of its own.

29. NaviStone has never built or attempted to build a database of names and addresses of visitors to its clients' website. In fact, NaviStone specifically designed the Services to prevent it (and its clients) from learning the names and addresses of those visitors and creating such a database.

30. Further, NaviStone never sells or rents data obtained from Harriet Carter's website (or the websites of its other clients), or otherwise discloses it to any third party.

31. NaviStone does not "track" users from one website to another.

MAILING LIST PRODUCTION

32. NaviStone assigns a score to each anonymous visitor ID reflecting its prediction of the likelihood that the visitor will respond favorably to direct mail sent by the U.S. mail (an "engagement score").

33. For the single Harriet Carter mailing which occurred in 2016, NaviStone used four (4) anonymous data points to score anonymous visitors on their likelihood to respond to direct mail promotions:

1. How many times did a visitor visit the Harriet Carter website?
2. How many months has it been since a visitor went to the Harriet Carter website?
3. How many product pages did the visitor view on the Harriet Carter website?
4. How many carts has a visitor put items into on the Harriet Carter website?

THE UBIQUITY OF TRANSMITTING BROWSING INFORMATION

34. It is very common for a website to send data about pages viewed by a visitor, or the details of that visitor's interactions with a website, to a technology partner for a number of purposes, including marketing.

35. In fact, the vast majority of modern websites rely on multiple technology partners to function, and would not be able to do so without the transmission of such data to third parties.

36. A website accomplishes this task by instructing the web browsing software used by a visitor to make direct transmissions of information to the technology partner.

37. For example, tens of millions of websites employ Google Analytics to gather information concerning visits to their sites. I am familiar with Google Analytics because I have installed and configured Google Analytics on a number of websites; I have looked closely at its operations in connection with my work for NaviStone; and I have used it to consult with more than 100 eCommerce companies over the past fifteen years.


38. Google Analytics gathers and receives browsing data in the same way that NaviStone does. In both cases, the website owner is provided with a line of JavaScript code to insert into the pages of his or her site. In both cases, that JavaScript runs as a part of the website, and causes transmissions of data to be made directly by the visitor's browsing software to the service provider's server—Google's server in the case of Google Analytics. They each transmit similar kinds of information, including the website pages visited, the number of pages visited, and activities undertaken on those pages, although the kinds of information transmitted by the NaviStone code is far more limited than what is transmitted by Google Analytics' code.

39. Google Analytics, however, is designed to do things that NaviStone does not do.

40. For example, Google combines the browsing data of visitors across all the sites they visit which contain the Google Analytics code, and uses that data for purposes of providing marketing services. NaviStone does neither of those things. Information sent to NaviStone concerning visits to one client's website, *e.g.*, Harriet Carter's website, is never combined with information obtained concerning visits to the websites of NaviStone's other clients, and none of the information sent to NaviStone is disclosed to anyone else or traded with third parties.

I declare under penalties of perjury under the laws of the United States that the foregoing
is true and correct.

DATED: November 13, 2020



Larry Kavanagh

Larry Kavanagh | Curriculum Vitae

447 Leath Ave, Cincinnati OH | 513-227-6849 | lkavanagh@navistone.com

Experience

CEO — NaviStone	2016 — present
NaviStone helps web based direct-to-consumer businesses send direct mail to website browsers in a privacy-compliant way.	
CEO — CohereOne	2014-2015
Consulting practice advising 40+ business on how to best combine catalog mailings and ecommerce marketing.	
CEO/Chief Strategy Officer — DMinSite/Kalio	2001-2013
Ecommerce platform, 100+ mid-market retailers	
CEO — Lagniappe Marketing	1998-2001
Ecommerce consulting practice. Clients include: eBags, Garden.com, Phillips	
President — Gardens Alive!	1991-1997
Mail Order Catalog business. Grew revenues from \$5MM to \$15MM	

Education

Xavier University — MBA, Cincinnati, OH	1993-1994
University of Chicago — undergraduate	1983-1987

Awards

John F. Barrett Entrepreneur Vision Award	2016
Entrepreneur of the Year - Cincinnati Business Courier	2005
INC Magazine 500 Fastest Growing Companies	2004

Communication

Conference Presentations: EtailWest, Shop.org, Internet Retailer, Direct Marketing Association, NEMOA, Response User Group, MACH User Group, CohereOne Summit, Kalio Summit.

Leadership

Chair, University of Chicago Parents Advisory Council	2014-2015
Current Board Member: Kalio, ACMA	



Navystone® Service Agreement

This Agreement, effective August 2, 2016, (the "Effective Date") sets the terms upon which Navystone® Inc. ("Navystone"), will provide Harriet Carter Gifts, Inc. ("Client") with postal names and addresses for engaged browsers on Client's website (the "Website"), for both prospecting and reactivation purposes.

Navystone® Inc. Responsibilities:

Navystone shall:

- 1) Provide to Client a single line JavaScript to enable data capture (the "JavaScript Code"). The Client will place the JavaScript Code on every page of the Website. Navystone will work with Client's technical team to ensure proper application of the JavaScript Code;
- 2) Work with Client to determine and implement the best method for matching website browsers to Client's existing customer base, for reactivation purposes;
- 3) Perform initial quality control work to ensure that data capture is accurate and comprehensive, and that the JavaScript Code does not materially impact website performance standards as defined by Client,;
- 4) Collect web browsing behavior 24x7x365 and store the collected data in a secure cloud environment;
- 5) Score all website visitors based on browsing activity to ensure that only fully engaged browsers are selected for prospecting and/or reactivation;
- 6) Provide prospecting files with postal addresses, net of house file names provided to Navystone, of web visitors that are qualified as high response prospects, for one time use by Client; and
- 7) Select qualified reactivation names from Client house file.

Client Responsibilities:

Client shall:

- 1) Install the JavaScript Code on each page of the Website;
- 2) Where reactivation services are desired, work with Navystone's technical team to determine and implement the best method for matching website browsers to Client's existing customer base;
- 3) Provide access to Google Analytics to facilitate quality control activities once the JavaScript Code is applied to the Website; and
- 4) ~~Provide Navystone a copy of Client customer file to allow for the suppression of existing Client customers from Prospect Lists;~~ *aa. 8/4/16*
- 5) Purchase a minimum of thirty thousand (30,000) prospecting or reactivation names on the terms provided in this Agreement within one hundred twenty (120) days of the start of data collection ("Purchasing Obligations").

Term and Termination: This Agreement will have a term of one (1) year from the Effective Date (the "Term") and shall automatically renew for additional one (1) year terms unless terminated by either party as provided in this Section. Upon termination, the terms of this Agreement shall terminate, except those sections that you would expect to survive termination: Use of Client Data, Intellectual Property, Limitation of Liability and Disclaimer, and Indemnification.

Either party may terminate this Agreement for any reason, effective immediately, at any time after Client has fulfilled its Purchasing Obligations.

Either party may terminate this Agreement for any reason on thirty (30) days' written notice. In the event that Client terminates this Agreement prior to fulfilling its Purchasing Obligations, Client will immediately owe to NaviStone® the full amount that NaviStone would be due if Client had fulfilled its Purchasing Obligations.

Upon termination or expiration of this Agreement, NaviStone® will archive all Client Data on NaviStone's cloud servers for a period of thirty (30) days prior to deleting all Client Data in its possession.

Pricing and Terms:

Client shall purchase names for prospecting or for reactivation for one time use at a rate of \$70 per thousand names shipped. Client will promptly provide to NaviStone®, for the purpose of invoicing, a copy of their merge purge results. NaviStone will invoice Client net of Client house file names and Client "do not mail" suppression files.

Client shall purchase a minimum of 10,000 names per order.

In its sole discretion, Client may purchase browsing data for Client's existing customers for 24 months unlimited use at a rate of \$240 per thousand names.

Client will be billed on the scheduled mail date, and all payments become due fifteen (15) days after scheduled Client mail date. If payment is not received within fifteen (15) days of the due date, Client will owe a service fee of 2% of the overdue invoice. Client will be charged an additional fee of 2% for each additional month the invoice remains unpaid.

If Client fails to order 30,000 names within one hundred twenty (120) days of the commencement of data collection, NaviStone will invoice Client \$1,500 as a data capture and storage fee and this Agreement will terminate, effective immediately. Upon NaviStone's receipt of the \$1,500 fee, Client will be relieved of its obligation to purchase any additional names.

Pricing is subject to change at the sole discretion of NaviStone. NaviStone will provide Client thirty (30) days' notice prior to any price increase.

Payment of any sales taxes, whether billed at the time of service or that may be imposed by a taxing authority at a later time, are the responsibility of the Client.

Use of Client Data:

NaviStone shall use Client Data solely to perform its obligations pursuant to this Agreement or pursuant to any other written arrangement with Client. NaviStone shall not disclose Client Data to any third party except as reasonably required for NaviStone to provide its obligations under this Agreement or as required by law or court order. NaviStone will take the same care regarding Client data as it does with its own proprietary data.

Intellectual Property:

All trademarks, patents, copyrights and other intellectual property rights owned by either party on the date of this Agreement, including without limitations all rights to the JavaScript Code, shall continue to be owned solely by such party, and nothing herein shall be deemed to confer any rights to any intellectual property on the other party except as expressly set forth herein or in other written agreements between the parties. Client maintains ownership of its web browsing data maintained on their behalf by NaviStone.

Limitation of Liability and Disclaimer:

In no event shall NaviStone's total liability under this agreement exceed the amount paid by Client to NaviStone during the six months prior to the incident giving rise to liability.

NAVISTONE MAY NOT BE HELD LIABLE TO CLIENT, OR TO ANY THIRD PARTY, FOR ANY INDIRECT, INCIDENTAL, SPECIAL, CONSEQUENTIAL, EXEMPLARY OR PUNITIVE DAMAGES (INCLUDING LOST OR ANTICIPATED REVENUES OR PROFITS) ARISING FROM ANY CLAIM RELATING DIRECTLY OR INDIRECTLY TO THE AGREEMENT, WHETHER BASED ON WARRANTY, CONTRACT OR TORT (WHETHER UNDER A THEORY OF NEGLIGENCE, STRICT LIABILITY OR OTHERWISE), EVEN IF AN AUTHORIZED REPRESENTATIVE OF NAVISTONE IS ADVISED OF THE LIKELIHOOD OR POSSIBILITY THEREOF. CLIENT ACKNOWLEDGES THAT NAVISTONE HAS RELIED UPON THE LIMITATIONS ON LIABILITY SET FORTH IN THIS AND, BUT FOR THEIR INCLUSION HEREIN, WOULD NOT HAVE ENTERED INTO THE AGREEMENT.

JAVASCRIPT CODE AND OTHER SERVICES ARE PROVIDED BY NAVISTONE® ON AN "AS-IS" BASIS. ALL OTHER WARRANTIES, WHETHER ORAL OR WRITTEN, EXPRESS OR IMPLIED OR CONTRACTUAL OR STATUTORY, ARE EXPRESSLY DISCLAIMED. THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE SPECIFICALLY DISCLAIMED.

Mutual Indemnification of Both Parties:

To the extent not prohibited by law, each party will forever indemnify, defend, and hold the other party and its subsidiaries, affiliates, related companies, officers, directors, employees, agents, representatives, partners, and licensors (the "Entities") harmless from and against any and all liabilities, damages, losses, claims, costs and expenses (including attorneys' fees) related to: (i) either party's violation of any applicable federal, state or local laws, regulations, rules and judicial and administrative decisions, including any applicable privacy and data protection laws (ii) either party's violation of any applicable privacy policy or any other privacy or confidentiality rights of any third party; (iii) a third-party claim of misappropriation or infringement of any intellectual property right in connection with either party's use of any of the other party's Data in accordance with this Agreement; and (iv) any misrepresentation by either party to the other.

Compliance with Privacy Laws:

Client is responsible for ensuring that it is in full compliance with all applicable laws and marketing regulations regarding the privacy of its customers and the collection, use and disclosure of its customers' information.

Client expressly warrants that the Website includes a clear and conspicuous link to its privacy policy on its customer-facing web page which will contain a provision substantially similar to the following:

"We may from time to time contract with third party vendors to serve ads to our customers on our behalf across the Internet or to send our catalogs to customers whom we think may be interested in our products or services. To do this, the vendors will collect anonymous information about your visits to our Web site and your interaction with our products and services. This anonymous information is collected through the use of a cookie or pixel tag – industry standard technology used by most major Web sites. No personally identifiable information is collected in this process. They may also pool the anonymous information that they collect with other sources of information not collected during your visit to our website, which may include your name and mailing address, for purposes of determining whether you might be interested in receiving a catalog.

If you do not wish for cookies or pixel tags to be placed on your computer, most commercially available web browsers permit you to prevent that from taking place. To opt-out of receiving our catalogs, you may send

us an email at [CLIENT CUSTOMER SERVICE EMAIL ADDRESS] or call us at [CLIENT CUSTOMER SERVICE PHONE NUMBER]"

NaviStone® will notify Client if it becomes aware of any changes in law that will require modifications to the above suggested privacy language.

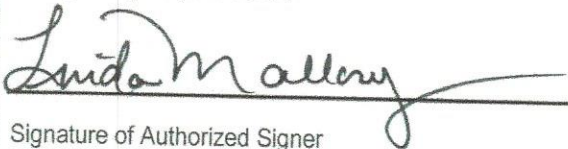

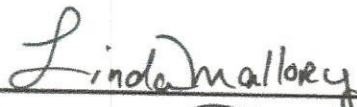

Choice of Law and Venue:

This Agreement and any action related thereto will be governed by the laws of the State of Pennsylvania without regard to or application of its conflict of law provisions or your state or country of residence.

Any disputes that arise under or in relation to this Agreement shall be resolved in the state and federal courts of the state of Pennsylvania. NaviStone expressly consents to personal jurisdiction of and venue in such courts and waives any objection as to inconvenient forum.

Acceptance:

The undersigned hereby represent that they are duly authorized to execute this Agreement on behalf of their respective organizations.

Harriet Carter Gifts, Inc. 425 Stump Road Montgomeryville, PA 18936	NaviStone® Inc. 1308 Race Street Cincinnati, OH 45202
	
Signature of Authorized Signer	Signature of Authorized Signer
 Linda Mallory	 Allen Abbott, CMO
Print Name and Title Director of Circulation	Print Name and Title
8-3-2016	8-4-16
Date	Date



Consumer Privacy

NaviStone's Commitment to Consumer Privacy

NaviStone's commitment to consumer privacy is a core building block of our business. In fact, we built the business with consumer privacy front of mind. Consumers want relevant advertising and information about products. However, to provide information that is relevant and useful, advertisers need to know what consumers are truly interested in, without compromising privacy. NaviStone has designed a marketing platform that protects consumer privacy while helping clients deliver more relevant advertising that consumers can use.

We require our clients to adhere to the strictest privacy guidelines as well. All customers have contractually agreed to the following requirements including: compliance with all applicable legal requirements under international, U.S., and state laws (including those of the State of California), full disclosure of how visitor data is collected by NaviStone and how it may be combined with other data including names and addresses from third-party databases for purposes of direct mail advertising, publishing instructions on how to prevent cookies from being placed on the visitor's computer, and links to additional information concerning opting-out of cookie-based advertising and other resources for opting out of advertising.

What NaviStone Does:

NaviStone models the browsing behavior of website visitors to determine which of those browsers might be interested in purchasing the advertiser's product or service. We then use third-party data partners to connect the visitor ID to a name and address, which is forwarded directly to the advertiser's printer or data services provider for inclusion in the mailing event. Neither NaviStone nor the advertiser takes possession of the name and address of the site visitor, assuring the anonymity of the website browser.

What NaviStone Does Not Do:

NaviStone does not capture visitor name and address information. Our data partners, who provide the name and address information to our clients' third-party printer or mailing services company, do not have access to any of the behavioral data that NaviStone uses to build our models. This patent-pending "double blind" marketing platform assures that no single party possesses both name and address and behavioral data, providing enhanced privacy protection and data security to all involved .

How Does NaviStone Work?

When an advertiser creates a campaign, NaviStone selects the visitors most likely to respond to that campaign, and sends their visitor IDs, stripped of the behavioral browsing data, to an outside data partner who connects the IDs with postal addresses. That information is then sent to a printer to be included, with other recipients, in an advertiser's direct mail campaign. Each client's data is stored separately in a secure environment and used for the sole purpose of that client. Such data is not shared with NaviStone's other clients, directly or indirectly.

Additionally, the consumer's name and address is never disclosed to either NaviStone or the advertiser, and the advertiser never learns their identity or their interests, unless they make a purchase and voluntarily provide their name and address.

Consumers who do not wish to receive direct mailings, and opt out by putting their name on the "do not mail" list maintained by the [Direct Marketing Association](#), do not receive any direct mail campaigns from NaviStone's clients.

NaviStone adheres to all privacy regulations and is [GDPR and CCPA compliant](#).

Learn more about how it works [here](#).

This document was last updated on October 3, 2019

Stay up to date with News from NaviStone®

Your email*

*By submitting information, I consent to receiving communications from NaviStone. I understand that I may opt-out of communications with NaviStone by using the unsubscribe link provided in NaviStone's email communications and [here](#).

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By matching site visitors, who have raised their hand and shown intent to buy, with their postal addresses, NaviStone's patent-pending technology enables you to enhance the effectiveness of your marketing programs and increase results. Our cost-effective solutions help uncover first-party prospects and lapsed customers to include in direct mail programs in a privacy safe way.

COMPANY

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11/11/20 8:00 AM



Comparing Retargeting by Channel

11/4/20 8:00 AM



Customer Experience: Cause Marketing

10/28/20 8:00 AM

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Cincinnati, OH 45202

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BRANN & ISAACSON
ATTORNEYS AND COUNSELORS AT LAW

Exhibit D

DAVID W. BERTONI | Partner
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Exhibit D

CONFIDENTIAL
BUSINESS INFORMATION

September 8, 2017

BY E-MAIL AND FIRST CLASS MAIL

brossen@ftc.gov

Benjamin R. Rossen, Esq.
Federal Trade Commission
Bureau of Consumer Protection
Division of Privacy and Identity Protection
600 Pennsylvania Avenue, N.W.
Mail Drop 8232
Washington, DC 20580

RE: NaviStone, Inc.

Dear Mr. Rossen:

This firm is legal counsel to NaviStone, Inc. (“NaviStone”) and submits this letter in response to your correspondence to Larry D. Kavanagh of NaviStone dated July 25, 2017, a copy of which is attached as **Exhibit A**. Because NaviStone’s business, described below, relies on proprietary techniques and other trade secrets having intrinsic value in a highly competitive industry, and because this letter also discloses the identities of NaviStone’s customers, we respectfully ask that this letter and its content be kept confidential by your agency.

I. INTRODUCTION

NaviStone is grateful for the opportunity to present the Federal Trade Commission (“FTC”) with information concerning marketing services it offers to its clients. Specifically, this letter is intended to address issues raised in two recent Gizmodo.com articles. In some respects,

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the articles are inaccurate; in other respects, additional context is required, which NaviStone hopes to present here.¹

The first issue identified by Gizmodo's writers, discussed in greater detail below, involves NaviStone's core business of assisting retailers in sending catalogs, letters, and postcards to individuals who visit their websites, but whose names and addresses are not on the retailer's own mailing lists. While other companies offer similar first-party marketing services, NaviStone does so in a way that protects the confidentiality of website visitors. Their names and addresses are never revealed either to NaviStone or its retailer clients in connection with its direct mail promotions. Moreover, under this program, information collected by NaviStone about a visitor's interaction with a client's websites is not shared with the client, nor is it used by NaviStone to unmask a visitor's name and address. Rather, what NaviStone does is use that information to generate a numerical score for each visitor to a client's website, which visitors are known to NaviStone by an anonymous visitor ID. This score is calculated by NaviStone using a proprietary algorithm intended to predict which of those visitors are most likely to respond to a client's physical mailings.²

The second issue identified by Gizmodo's writers, also discussed below, involved the transmission of text-based information, including email addresses, to a NaviStone server from "form fields" on a retailer's website. Such transmissions occurred when the visitor "tabbed out" of a form field only; it did not involve keystroke logging. For NaviStone, the data point it used to score a website visitor for direct mail promotions was whether an email address had been submitted, not the email address itself, and so NaviStone promptly ceased the transmission of all form field information to its server after concerns were brought to its attention by Gizmodo. Under NaviStone's proprietary algorithm, the submission of an email address is one of a number of factors—a "suppression factor"—that predicts a lower likelihood of a visitor responding to direct mail advertisements. The content of the information gathered from fields, including email

¹NaviStone was mentioned in two articles on the Gizmodo website. The first, written by Kashmir Hill and Surya Mattu, appeared on June 19, 2017, and was entitled, "How a Company You've Never Heard of Sends You Letters About Your Medical Condition," <http://gizmodo.com/how-a-company-you-ve-never-heard-of-sends-you-letters-a-1795643539>. A copy of this article is attached as **Exhibit B**. The second, written by the same authors, appeared on June 20, 2017, and was entitled, "Before You Hit 'Submit,' This Company Has Already Logged Your Personal Data," <https://gizmodo.com/before-you-hit-submit-this-company-has-already-logge-1795906081>. A copy of the article is attached as **Exhibit C**.

²Because sending promotions by mail involves costly printing, postage, and mailing services, it is especially important to retailers that they only send catalogs and postcards to persons who have a higher likelihood of being interested in and responding to them. This is consistent with the consumers' interest in avoiding a mailbox full of catalogs they are unlikely to want or use.

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addresses, was never disclosed to clients or otherwise used by NaviStone in connection with scoring a website visitor.

Once you have had a chance to review this letter, we would appreciate an opportunity to address any further questions you might have. NaviStone is committed to working with the FTC in a cooperative fashion should the agency have concerns about any the issues addressed in this letter or raised by the Gizmodo articles.

II. DISCUSSION

As explained earlier, the majority of NaviStone's clients use the company to send physical mail advertisements—catalogs, letters, or postcards—to consumers who are not on their mailing lists, but who have visited their websites.³ As also explained earlier, NaviStone does so while keeping the identities of those persons secret from both NaviStone and its retailer clients. It is up to consumers, if they decided to respond to the mailing, to provide their personal information, including their names and addresses, to the retailer. If not, they remain anonymous. Attached as **Exhibit D** is a copy of NaviStone's Master Service Agreement (the "Services Agreement") which it enters into with its clients.⁴

NaviStone maintains consumer anonymity through an arrangement with an unrelated third-party company, Neustar, Inc. ("Neustar"). Neustar maintains a database of individuals who voluntarily provided their names and mailing addresses after being advised via privacy policies that (1) this information would be shared with third parties for marketing purposes; and (2) they could opt out of receiving such third-party marketing. Only website visitors who satisfy *both* of

³The June 20, 2017 article in Gizmodo discusses the authors' test of three websites—Rockler.com, CollectionsEtc.com, and BostonProper.com—where email promotions were sent based on items left in shopping carts or as a result of some other triggering event. While these companies are clients of NaviStone, NaviStone was not involved in these activities. These companies retained NaviStone for its direct mail promotion service only. While NaviStone does provide a small number of its clients with "trigger email" services (approximately 8% of its business), it does so using email addresses supplied by its clients.

⁴Under the Services Agreement with NaviStone, a client must warrant and represent that it is "in full compliance with all applicable laws and marketing regulations regarding the privacy of its customers and the collection, use and disclosure of its customers' information," and that it has "procured all necessary approvals required for the performance of this Agreement, including NaviStone's use of Client data." [Services Agreement at p. 4]. In addition, NaviStone's retailer clients warrant that their website "includes a clear and conspicuous link to its privacy policy," and each agree to include in that policy an accurate disclosure of the collection and use of information in connection with NaviStone's direct mail program—which disclosure must give visitors the right to opt-out of receiving direct mail promotions. [Services Agreement at p. 4].

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these conditions are eligible to be sent a direct mail promotion under NaviStone's program. Neustar keeps these names and addresses secret from both NaviStone and its clients. It assembles the mailing list for each promotion and sends that list, on a confidential basis, to the third-party mailing house responsible for sending the promotion.⁵

NaviStone, for its part, collects data about visitors to its retailer clients' websites using JavaScript code and cookies. Such data includes the pages visited by persons exploring the retailer's website, which pages are mapped by NaviStone to the product categories they represent. NaviStone, as previously described, analyzes the visitor information it collects on an anonymous basis to determine, based on its proprietary algorithm, the likelihood of each visitor responding favorably to a mailed advertisement from that retailer. NaviStone's retailer clients may then request that mailings be sent to those visitors receiving higher numerical scores.⁶ As noted earlier, NaviStone's scoring system helps keep unproductive catalogs and postcards out of the marketing ecosystem by anticipating which visitors are more likely to welcome and respond to a direct mail promotion from the retailer they visited. This goal is furthered by the removal from all mailing lists of individuals appearing on either the retailer's own "do not mail" list or the industry-wide "do not mail" list maintained by the Data & Marketing Association ("DMA"). Finally, lists generated under the NaviStone program are further scrubbed against an industry-standard, third-party compilation of names and addresses warranted as eligible for direct mail promotion. Persons not appearing on this list are removed.

Until June of 2017, NaviStone's technology was set up to collect automatically text information in form fields, including email addresses. This information was sent to NaviStone if the visitor tabbed out of a field after typing information. NaviStone's scoring algorithm used the

⁵Specifically, if a website visitor has a prior relationship with Neustar, a Neustar visitor ID will be present on the consumer's browser unless deleted by the consumer. If a visitor with such an ID arrives on a website of one of NaviStone's clients, Neustar will advise NaviStone with a "yes" or "no" if it has a name and address for that visitor ID that is eligible to receive third-party promotions. Neustar provides no other information to NaviStone. Only those visitors for whom a "yes" is received from Neustar are eligible to receive promotional mailings under NaviStone's program. Conversely, the only information provided by NaviStone to Neustar is a "yes" as to which visitor IDs should be utilized to create retailer-specific mailing lists. NaviStone does not disclose to Neustar any information about the browsing activities of those visitors, nor is Neustar privy to the direct mail promotions sent to persons appearing on the mailing lists.

⁶From time to time, a retailer may request that addresses from its house list be included in this otherwise anonymous mailing. In such a case, they are added, but without revealing any other names and addresses on the list. In addition, a retailer client may give NaviStone certain initial criteria for determining which visitors will receive a mailing. For example, a retailer may give NaviStone a "pre-select" instruction that mailings only be sent to visitors who looked at furniture offerings. Similarly, the retailer may request—as was true with former client AcurianHealth—that mailings be sent to those who visited a specific web page.

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presence of an email address as a suppression factor (defined by such form information having an “at sign,” @, and a period), based upon its determination that the typing in of such an address would make the visitor less likely to respond to a direct mail promotion. Because it neither needed nor used email addresses themselves (or any other information from form fields) as part of its scoring of website visitors, and to address the Gizmodo authors’ justifiable concern about other potential uses of such information not engaged in by NaviStone, NaviStone terminated the automatic transmission of email addresses and all other form-input information. NaviStone terminated permanently these transmissions during the week of June 12, 2017 when Gizmodo contacted the company and expressed concerns about the practice, although it took slightly longer (until August 3, 2017) to complete the process for one of its clients.

Against this backdrop, NaviStone further addresses specific issues raised in the two Gizmodo.com articles:

The June 19, 2017 Gizmodo Article. This article addresses a consumer’s receipt of a letter from AcurianHealth, which letter invited the recipient to participate in a study of people with psoriasis. AcurianHealth is a former client of NaviStone for the first-party direct mail marketing services described above. NaviStone did not review or approve what AcurianHealth mailed to its website visitors under the program—and therefore it cannot confirm if this particular letter was mailed (a) under the NaviStone program; (b) in connection with a program offered by one of NaviStone’s competitors; or (c) by AcurianHealth directly. However, because AcurianHealth did pre-select anonymous visitors for mailings based on the web pages they visited, consumers could be sent letters tailored to the web pages chosen for pre-selection. Thus, for example, a visitor to a web page maintained by AcurianHealth discussing psoriasis might receive a letter from AcurianHealth about an AcurianHealth-sponsored psoriasis study. However, AcurianHealth would not be privy to the names and addresses of the persons to whom such letters were sent.⁷

Finally, as explained above, if email addresses were transmitted to NaviStone via a form field on any AcurianHealth website, they were never shared by NaviStone with AcurianHealth or anyone else, or used to “unmask” and reveal to AcurianHealth the identity of website visitors. Rather, the presence of an email address was, as explained earlier, factored in as a “negative” in terms of predicting whether a visitor would respond to a direct mail promotion. There was no

⁷Like NaviStone’s other clients, neither AcurianHealth nor NaviStone were informed of the names and addresses to which its direct marketing materials are mailed. As a result, the fear raised by the Gizmodo authors, that NaviStone was somehow involved in helping AcurianHealth “unmask anonymous web site visitors” is inaccurate. Moreover, NaviStone’s program is strictly a first-party marketing program. Any mailings resulting from participation in the NaviStone program are mailings by clients marketing their own businesses only, and not mailings by or on behalf of third parties (such as Walgreens or WebMD, both of which are mentioned in the article and neither of which have been clients of NaviStone).

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other use of any such transmitted email address information, and, as previously noted, NaviStone ended its collection of such information not only because it was unnecessary to provide its services, but to avoid future misunderstandings about how its program works and address the reasonable concerns raised by Gizmodo.

The June 20, 2017 Gizmodo Article. This article includes a discussion of the Quicken Loans mortgage calculator. NaviStone does provide services to Quicken (not directly, but as a service provider to Neustar), but while information input into form fields was previously transmitted to NaviStone's servers (a practice discontinued as of August 3, 2017), neither form-field information nor any other information about website usage by visitors was disclosed to Quicken or Neustar, nor was the content of such information used by NaviStone to score visitors to Quicken's website. Rather, as explained above, NaviStone used the fact of email addresses as a suppression data point—as explained previously. With regard to form fields, for Quicken, NaviStone also used the number of those form fields tabbed through by visitors for purposes of scoring, without regard for the content of such fields. Thus, under NaviStone's algorithm, tabbing through a greater number of form fields could be considered predictive of a higher likelihood of responding to a direct mail promotion.

With regard to Road Scholar, a client of NaviStone, NaviStone did not provide Road Scholar with the services described in the article, *i.e.*, reactivation of persons already on the company's mailing list, although the possibility of services like this was raised with NaviStone. Rather, NaviStone's work for Road Scholar was limited to the anonymous direct mail prospecting previously described in this letter. The same limitation is true for Wayfair, which, contrary to the article's statement, does not collect email addresses "using the NaviStone tool..." Wayfair is also a client of NaviStone that employs it for the direct mail prospecting work described in this letter. As NaviStone has explained, the company did not collect email addresses for Wayfair, and did not use email addresses to "try to find out [a visitor's] home address in order to send them direct mail," contrary to speculation in the article.

III. CONCLUSION

NaviStone's service provides retailers with a better way to engage by mail customers who are interested in their products and services, having already visited their websites. It is an approach built from the ground up to be limited in scope and to protect consumer privacy in the following ways:

First, the information NaviStone collects on behalf of a client relates only to the behavior of visitors to that client's own websites. At NaviStone, browsing data is segregated by client website and is not combined with any information about other clients and their websites. Nor does NaviStone use data obtained in connection with its work for one client in its work for any other client.

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Second, the direct mail promotions facilitated by NaviStone are strictly first-party marketing initiatives, limited in reach to persons who have interacted with the client's websites and, based on their activities, are likely to be interested in receiving the client's promotional mailings.

Third, neither NaviStone nor its clients are provided with the names and addresses to which those promotions are sent. In this way, the identities of web site visitors are never "unmasked." While Neustar compiles mailings lists under the program, it is given no information as to how the list was compiled, the scores assigned to website visitors, or the information collected—and algorithm used—by NaviStone in arriving at such a score.⁸

Fourth, NaviStone only analyzes and scores browsing data of website visitors who have a Neustar visitor ID downloaded by their browser, identifying them as visitors who have been advised that they may receive third party marketing and have not opted out of receiving such marketing.

Finally, NaviStone's contracts require a representation and warranty of compliance with all applicable privacy laws, disclosures regarding the collection and use of data for purpose of NaviStone's mail promotion services on its client's website, and an online and telephonic mechanism through which to opt out of receiving promotions by U.S. mail. NaviStone's service is also designed to protect consumer choices about marketing by vetting all mailings against the "do not mail" lists of both the client and the DMA, as well as through a final check against an industry-standard list of promotable names and addresses.

At the same time, NaviStone recognizes that there is often confusion regarding new technology and marketing approaches. The Gizmodo articles described certain elements of NaviStone's product, but did so without the benefit of the context or a full understanding of the service that NaviStone provides for its clients. Part of this confusion was engendered by the proprietary and competitively sensitive nature of NaviStone's approach, which limited what it could share with Gizmodo's writers. As a result, the articles made certain assumptions that were incorrect. Nevertheless, NaviStone was able to, and in fact has, disabled the form field practices that were the focus of the Gizmodo articles because it concluded that it was the right thing to do

⁸As explained above, NaviStone never shares visitor activity information it may have with either its clients or Neustar. Rather, it scores website visitors—and only those with Neustar cookies on their browsers—and then provides Neustar with a list of anonymous prospects identified by a cookie ID only. Neustar then creates a mailing list by matching its Neustar IDs with names and address it already has of individuals who have previously been advised they may receive third party mailings. These lists are never shared with NaviStone or NaviStone's clients, but are fulfilled confidentially by a third-party mailing house.

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under the circumstances, and because those practices gave the erroneous impression that it was collecting and sharing personally identifiable information with its retailer clients or using its services as a way to “unmask” and provide names and addresses to its clients.

NaviStone believes that its work does not violate the privacy of retailer website visitors, but nonetheless looks forward to working collaboratively with the FTC to describe its service and to address any concerns the agency may have.

Very truly yours,

BRANN & ISAACSON

A handwritten signature in blue ink, appearing to read 'David W. Bertoni', with a large, sweeping flourish extending to the right.

David W. Bertoni

DWB/
Enclosures



UNITED STATES OF AMERICA
Federal Trade Commission
WASHINGTON, D.C. 20580



Bureau of Consumer Protection
Division of Privacy and Identity Protection

July 25, 2017

By Federal Express

Larry D. Kavanaugh
NaviStone, Inc.
447 Leath Avenue
Cincinnati, OH 45238

Dear Mr. Kavanaugh:

The staff of the Federal Trade Commission's Division of Privacy and Identity Protection is conducting a non-public inquiry into the business practices of NaviStone, Inc. ("NaviStone"). Our inquiry relates to NaviStone's privacy practices with respect to the collection and use of consumer personal information obtained through NaviStone's software.

Staff is evaluating whether NaviStone may have engaged in unfair or deceptive acts or practices, in violation of Section 5 of the Federal Trade Commission Act, 15 U.S.C. § 45. We will be requesting information and documents from NaviStone in the weeks ahead. In the interim, NaviStone and its agents and vendors must suspend any routine procedures for document destruction and take other measures to prevent the destruction of documents that may be in any way relevant to a potential investigation, irrespective of whether NaviStone believes that such documents may be protected from discovery. Failure to retain records, documents, or materials that may be relevant to this matter may result in civil or criminal liability. *See* 15 U.S.C. § 50.

Prior to responding to our forthcoming requests for specific information and documents, we invite NaviStone to submit any information or materials that the company believes may be helpful to the Commission's understanding of this matter. We will treat any documents or other materials that NaviStone submits voluntarily as confidential, provided that they are marked "Confidential." *See* 15 U.S.C. §§ 46(f), 57b-2; 16 C.F.R. §§ 4.10-11.

We look forward to your cooperation. Please do not hesitate to contact me with any questions at (202) 326-3679.

Sincerely,

Benjamin R. Rossen
Attorney

Division of Privacy and Identity Protection

PRIVACY AND SECURITY**How a Company You've Never Heard of Sends You Letters about Your Medical Condition**

Kashmir Hill and Surya Mattu

6/19/17 2:41pm Filed to: PRIVACY

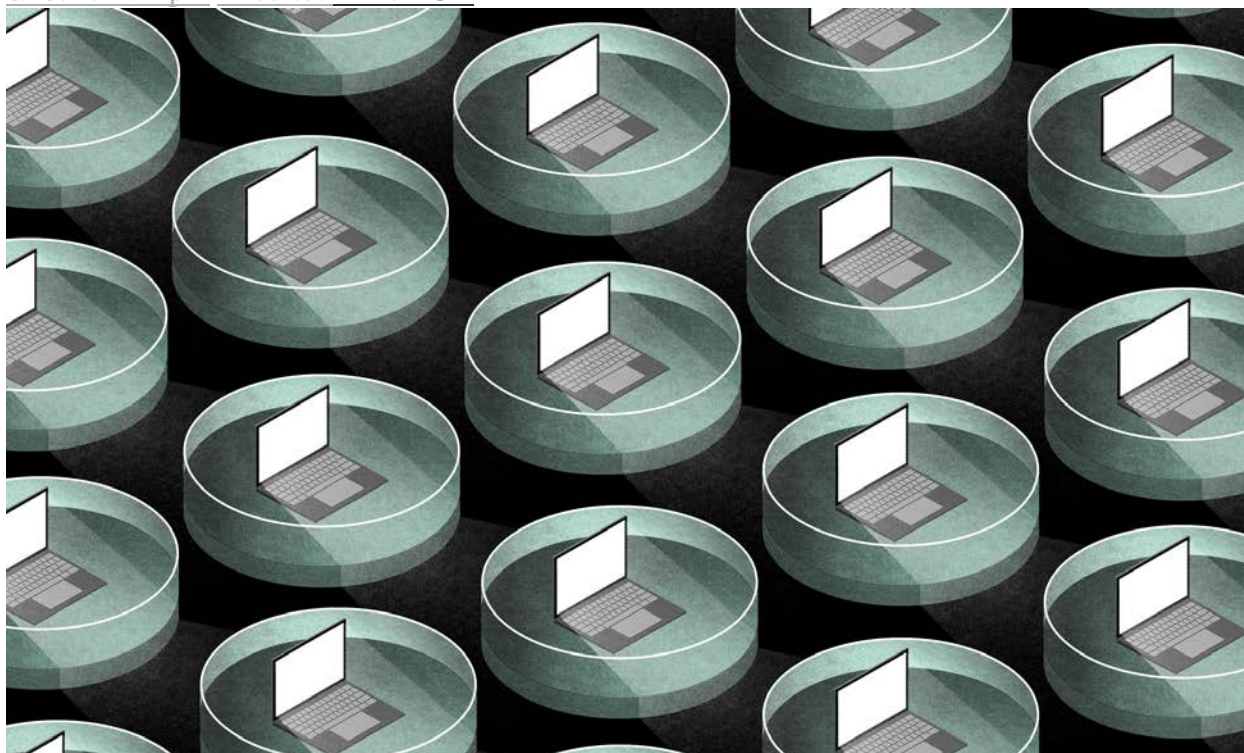


Image by Jim Cooke

In the summer of 2015, Alexandra Franco got a letter in the mail from a company she had never heard of called AcurianHealth. The letter, addressed to Franco personally, invited her to participate in a study of people with psoriasis, a condition that causes dry, itchy patches on the skin.

Franco did not have psoriasis. But the year before, she remembered, she had searched for information about it online, when a friend was dealing with the condition. And a few months prior to getting the letter, she had also turned to the internet with a question about a skin fungus. It was the sort of browsing anyone might do, on the assumption it was private and anonymous.

Now there was a letter, with her name and home address on it, targeting her as a potential skin-disease patient. Acurian is in the business of recruiting people to take part in clinical trials for drug companies. How had it identified her? She had done nothing that would publicly associate her with having a skin condition.

When she Googled the company, she found lots of people who shared her bewilderment, complaining that they had been contacted by Acurian about their various medical conditions. Particularly troubling was a parent who said her young son had received a letter from Acurian accurately identifying his medical condition and soliciting him for a drug trial—the first piece of mail he’d had addressed to him besides birthday cards from family members.

Acurian has attributed its uncanny insights to powerful guesswork, based on sophisticated analysis of public information and “lifestyle data” purchased from data brokers. What may appear intrusive, by the company’s account, is merely testimony to the power of patterns revealed by big data.

“We are now at a point where, based on your credit-card history, and whether you drive an American automobile and several other lifestyle factors, we can get a very, very close bead on whether or not you have the disease state we’re looking at,” Acurian’s senior vice president of operations told the Wall Street Journal in 2013.

Yet there's some medical information that Acurian doesn't have to guess about: The company pays Walgreens, which uses a privacy exemption for research, to send recruitment letters to its pharmacy customers on Acurian's behalf, based on the medications they're using. Under this arrangement, Acurian notes that it doesn't access the medical information directly; the customers' identities remain private until they respond to the invitations.

And that is not the entire story. An investigation by the Special Projects Desk has found that Acurian may also be pursuing people's medical information more directly, using the services of a startup that advertises its ability to unmask anonymous website visitors. This could allow it harvest the identities of people seeking information about particular conditions online, before they've consented to anything.

Walgreens

June 21, 2013

Thank you for choosing Walgreens for your prescriptions. We're writing to share some information about a clinical research study that may be of interest to you.

Research studies contribute greatly to the overall progress in understanding and treating diseases and Walgreens supports that mission. AcurianHealth, a research organization that provides services related to clinical studies, is currently seeking people to participate in a study pertaining to a treatment for Chronic Obstructive Pulmonary Disease (COPD).

Qualifying participants may receive at no cost:

- Investigational study drug for COPD
- Up to 1 year of study-related care and monitoring from a local doctor experienced in respiratory diseases (health insurance is not required.)
- Possible compensation up to \$550

For more information, please visit www.TrialForCOPD.com or call us toll-free at 1-866-449-8948 anytime - 24 hours a day, 7 days a week.

You are under no obligation to participate in this study - the decision to participate is entirely yours. Walgreens does not share your personal information with AcurianHealth. Your privacy is strictly guarded. If you decide to qualify for the study, then at that time you can choose whether to provide your personal information.

Sincerely,

Your Walgreens Pharmacy

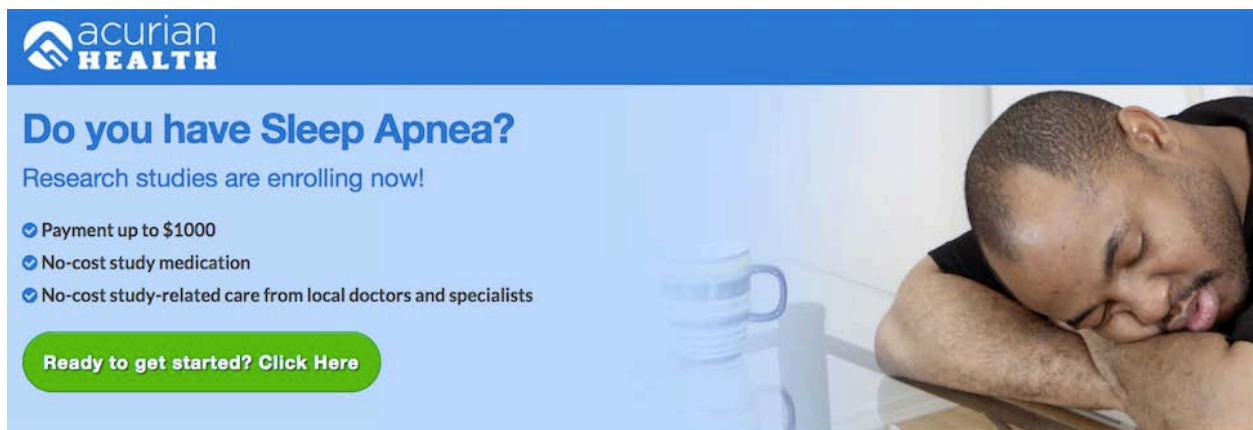
AcurianHealth funded the cost of mailing this letter and paid a fee to Walgreens. The research study is sponsored by AcurianHealth and is not being conducted by Walgreens. This letter and study should not be construed as a recommendation or endorsement by Walgreens. No information about you has been provided to AcurianHealth. Call Walgreens toll free at 888-208-1853 if you do not want to receive further mailings about research studies from Walgreens.

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11RX0175-0613 ACOPD3

A letter sent out to a Walgreens customer in Connecticut on Acurian's behalf. It invited her to visit a generic sounding website for people with pulmonary disease. At the time, she had a prescription from Walgreens for asthma.

If you're suddenly thinking back on all of the things you've browsed for online in your life and feeling horrified, you're not alone.

AcurianHealth has created dozens and dozens of generic sounding websites for the trials they're recruiting for: www.trialforCOPD.com, www.studiesforyourarthritis.com, and www.kidsdepressionstudy.com are a few examples of the many websites they own. The sites all feature stock images of people in distress, sometimes include AcurianHealth's logo, and include promises of up to \$1,000 for participating, depending on the study.



An example of one of the Acurian sites, www.sleepapneastudies.com

Out of view, some of these sites include something else: code from a company called NaviStone—which bills itself as a specialist in matching “anonymous website visitors to postal names and addresses.” So if a person is curious about one of those letters from Walgreens, or follows one of Acurian's online ads, and visits one of Acurian's generic disease-specific sites, their identity could be discovered and associated with the relevant condition.

Take Your Retargeting Offline.

Until today, your ability to retarget anonymous website shoppers was limited to low-impact, low-response digital display ads.

With the NaviStone® turn-key Postcard program, you can:

- ✓ Reach out directly to anonymous website shoppers.
- ✓ Tailor your marketing to the individual shopper based on their website behavior.
- ✓ Mail personalized postcards within 24-48 hours after a site visit.

Fill out the form to get in touch with a NaviStone® team member who will work with you develop strategy tailored to **your specific needs**.

See How NaviStone® Will Work for You

First Name

Last Name

Email*

SUBMIT

NaviStone says it can send personalized mail to anonymous website visitors with a day or two of their visit.

This tracking function undermines what’s supposedly a formal separation between Walgreens customer data and Acurian’s recruitment. If Walgreens sends out a bunch of letters to customers taking certain medications, and those customers then visit the generic website controlled by Acurian provided in the letter, Acurian can infer its wave of new visitors are taking those medications—and, if NaviStone delivers on its promise to identify visitors, Acurian can see who they are.

Walgreens gives itself permission to use customers’ health information for “research” purposes, which would include clinical trials, in its privacy policy. It’s been working with Acurian since at least 2013, and in 2015, Walgreens announced it was “leveraging” its 100 million customer database to recruit patients directly for five major drug companies.

When asked about its partnership with Acurian, Walgreens spokesperson Scott Goldberg pointed me to a [Walgreens FAQ page about clinical trials](#). It states that Walgreens doesn't share health information with third parties without permission, but that a third party may "receive your information if you contact the web-site and/or toll-free number in the letter to seek more information about the clinical trial."

The question is whether users will know that one of Acurian's websites has received their information—even if they haven't necessarily agreed to submit it. NaviStone, an Ohio-based business spun out from the marketing firm CohereOne last year, claims to be able to identify between 60 and 70 percent of anonymous visitors to the websites that use its services.

When we contacted the firm last month to ask how it does this, Allen Abbott, NaviStone's chief operating officer, said by phone that talking about how its technology works is "problematic."

"A lot of our competitors would love to know how we made it work," Abbott said. "We have an advantage that we would be silly to reveal."

We asked whether the company had thought about the privacy implications involved in identifying people visiting a website for sensitive reasons, and whether there were certain customers the company wouldn't work with.

"Our business is almost entirely e-commerce, helping retailers sell to their customers," he said. "There was one site that came into our radar that was adult-related material that we decided not to pursue."

We then described what Acurian does.

“We don’t work with anyone like that,” he said.

We explained that the call was because we’d found NaviStone’s code on AcurianHealth sites.

“It’s possible,” he then said. “We have a lot of customers.”

But Abbott insisted that NaviStone had found a “privacy compliant way” to identify anonymous website visitors—again saying he couldn’t describe it because it was a proprietary technology.

When we analyzed the NaviStone code on Acurian’s sites, we found one way that NaviStone’s technology works: It collects information as soon as it is entered into the text boxes on forms, before the person actually agrees to submit it. When we typed a test email address in the “Join Us” page on Acurian’s site, it was immediately captured and sent to the company’s servers, even if we later chose to close the page without hitting the “Send” button on the form.

In fact, the information was collected before we got to the part of the form that said, “Your privacy is important to us. By selecting this box, you agree to our Privacy Policy and Terms of Use, and agree that we contact you by phone using automated technology or other means using the information you provided above regarding research studies.”

“If I haven’t hit send, what they seem to be doing almost seems like hacking,” said Lori Andrews, a law professor at the Chicago-Kent School of Law. “It’s similar to a keystroke tracker. That could be problematic for them.”

Ryan Calo, a law professor at the University of Washington, said this clearly violates a user's expectation of what will happen based on the design of the site. "It's not that they lied to you with words, but they've created an impression and violated that impression," said Calo who suggested it could violate a federal law against unfair and deceptive practices, as well as laws against deceptive trade practices in California and Massachusetts. A complaint on those grounds, Calo said, "would not be laughed out of court."

When we followed up with NaviStone's Abbott by email, he insisted that the company doesn't send any data to Acurian.

"We don't send any email for Acurian, or pass along any email addresses to them or use their email addresses in any way or manner," said Abbott by email. "If we are indeed inadvertently collecting email addresses, we will fix immediately. It's not what we do."

But when the Special Projects Desk reviewed dozens of other companies' websites that were using NaviStone's code, they were also collecting email addresses. After a month of repeated inquiries to NaviStone and to many of the sites using its code, NaviStone last week stopped collecting information on the site of Acurian and most of its other clients before the "Submit" button was pressed.

"Rather than use email addresses to generate advertising communications, we actually use the presence of an email address as a suppression factor, since it indicates that email, and not direct mail, is their preferred method of receiving advertising messages," said Abbott by email. "While we believe our technology has been appropriately used, we have decided to change the system operation

such that email addresses are not captured until the visitor hits the ‘submit’ button.”

Asked about its partnerships with Walgreens and NaviStone, Acurian declined to be interviewed.

“As a general policy based on our confidentiality agreements with our business partners, I hope you will understand that Acurian does not discuss its proprietary business strategies,” said Randy Buckwalter, a spokesperson for PPD, the corporate parent of Acurian, by email.

Buckwalter told us Acurian would provide a fuller response to what is reported here, but never provided it.

Kirk Nahra, a partner at the law firm Wiley Rein who specializes in health privacy law, said there’s nothing really wrong with Walgreens sending out letters to customers on Acurian’s behalf. “But that second situation, where I go to look at the website and at that point they have some way of tracking me down, their ability to track me down at that point is troubling,” Nahra said.

Nahra said there was a potential legal issue if the company fails to disclose this in its privacy policy, and that it could lead to a class action lawsuit. Acurian’s privacy policy only talks about getting information from “data partners” and collecting expected information from website visitors, such as IP addresses—which can be used to track someone from website to website, which is why it’s a good idea to use technology that obscures your IP address, such as Tor or a VPN.

The ability to identify who is sick in America is lucrative. Acurian offers a collection of case studies to potential customers in which it discloses what it bills: \$4.5 million for recruiting 591 people with diabetes; \$11 million for 924 people with opioid-induced constipation; \$1.4 million for 173 teens with ADHD; and \$6 million for 428 kids with depression.

Acurian claims to have a database of 100 million people with medical conditions that could be of interest to drug companies, and it says that all of those people have “opted-in” to be contacted about trials. In addition to internet complaints suggesting otherwise, the Federal Trade Commission has received more than 1,000 complaints over the last 5 years from consumers who say the company has contacted them without consent; some complainants also wanted to know how the company had found out about their medical conditions.

Acurian has also faced a slew of class-action lawsuits in Florida, Texas, and California from plaintiffs who say the company had illegally robocalled them about clinical trials, placing multiple automated calls to their home without getting their permission first, a violation of federal law. Acurian denied wrongdoing in court filings, saying its calls are not commercial in nature and that the plaintiffs had opted in, but settled all the suits out of court.

Alexandra Franco certainly didn’t opt in to be contacted for clinical trials. She doesn’t have psoriasis or any prescriptions for a skin condition. When she looked back at her browsing history, it appeared that the only website she visited as part of her search was the mobile version of WebMD.com.

“While Acurian had purchased display advertising from WebMD in 2010, we have never hosted a program for them in which personal information was collected or shared,” said WebMD in a statement. “Under our Privacy Policy we do not share personal information that we collect with third parties for their marketing activities without the specific consent of the user. In this case, it appears that the user did not even provide any personal information to WebMD.”

“Doing a search on your mobile device means you are incredibly re-identifiable,” said Pam Dixon of the World Privacy Forum, referring to the fact that a mobile device provides more unique identifiers than a computer typically does.

Franco doesn’t understand exactly how Acurian got her information, but said that the letter was sent to her home addressed to “Alex Franco,” a version of her name that she only uses when doing online shopping. When she sent an inquiry to Acurian, the company told her it got her name from Epsilon, a data broker, “based on general demographic search criteria.”

“Epsilon specializes in compiling mailing lists based on generally available demographic information like age, gender, proximity to a local clinical site and expressed interests,” said the company in an email. “We sincerely regret any distress you may have experienced in thinking your privacy may have been compromised, and we hope this letter has assured you that nothing of the kind has occurred.”

Franco didn’t feel particularly assured. Epsilon lets consumers make a request to find out what information the data broker has on them; in response to her request, Epsilon told Franco by letter that it has her home address and information about her likely income, age, education level, and length of

residence, as well as whether she has kids—none of which would seem to indicate dermatological issues.

At the end of our investigation, we still don't know exactly how Franco was identified as possibly having a skin condition. Given the many players involved and the fact that we can't see into their corporate databases means we can only make reasonable assumptions based on the outcome.

It's the online privacy nightmare come true: a company you've never heard of scraping up your data trails and online bread crumbs in order to mine some of the most sensitive information about you. Acurian may try to justify the intrusion by saying it's in the public interest to develop new drugs to treat illnesses. But tell that to the person shocked to get a letter in the mail about their irritable bowels.

Yes, we found that person. Bret McCabe complained about it on Facebook. He got the letter in 2012 after regularly buying both anti-diarrhea medicine and laxatives at Walgreens and Rite-Aid for a family member dealing with chronic pain issues.

"The creep factor of the specificity is what I found particularly grating," said McCabe by phone. "It's one thing to get spam about erectile dysfunction or refinancing your car loan but in this case, it seemed like they specifically knew something about me. It was meant for me and me only."

The privacy scholar Paul Ohm has warned that one of the great risks of our data-mined society is a massive "database of ruin" that would contain at least one closely-guarded secret for us all, "a secret about a medical condition, family history, or personal preference... that, if revealed, would cause more than embarrassment or shame; it would lead to serious, concrete, devastating harm."

Acurian has assembled one of those databases. As with all big databases, the information doesn't even have to be accurate. So long as it gets enough of its letters to the right people, the recruitment company doesn't need to care if its collection efforts misidentify Franco as a psoriasis patient or otherwise incorrectly link people, by name, to medical conditions they don't have.

This is the hidden underside of the browsing experience. When you're surfing the web, sitting alone at your computer or with your smartphone clutched in your hand, it feels private and ephemeral. You feel freed to look for the things that you're too embarrassed or ashamed to ask another person. But increasingly, there is digital machinery at work turning your fleeting search whims into hard data trails.

The mining of secrets for profit is done invisibly, shrouded in the mystery of "confidential partnerships," "big data," and "proprietary technology." People in databases don't know that dossiers are being compiled on them, let alone have the chance to correct any mistakes in them.

This story was produced by Gizmodo Media Group's Special Projects Desk. Email senior reporter Kashmir Hill at kashmir.hill@gizmodomedia.com and data reporter Surya Mattu at surya.mattu@gizmodomedia.com.

Before You Hit 'Submit,' This Company Has Already Logged Your Personal Data



Kashmir Hill and Surya Mattu

6/20/17 2:23pm

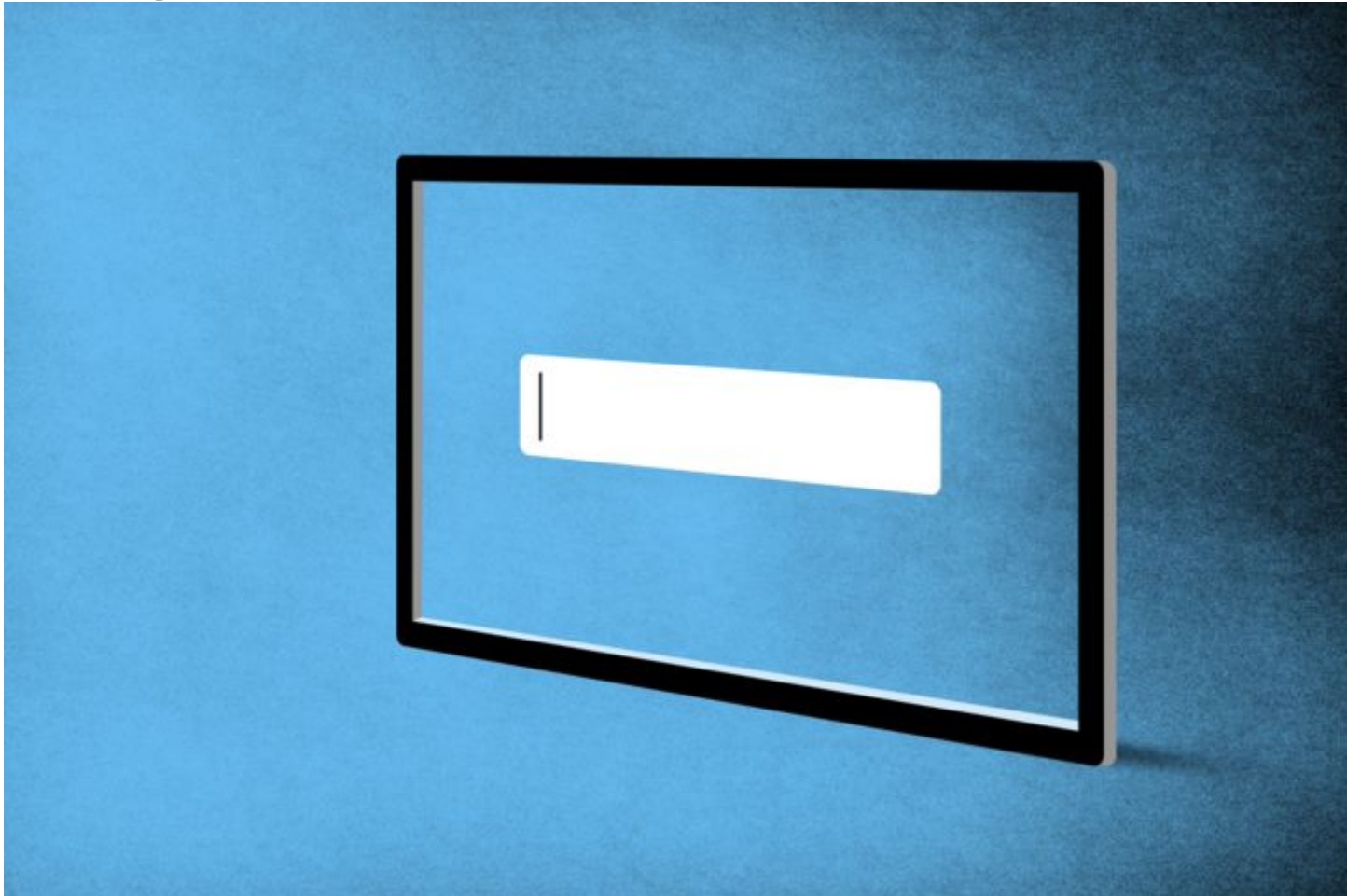


Image by Jim Cooke

If you're daydreaming about buying a home or need to lower the payment on the one you already have, you might pay a visit to the Quicken Loans mortgage calculator. You'll be asked a quick succession of questions that reveal how much cash you have on hand or how much your home is worth and how close you are to paying it off. Then Quicken will tell you how much you'd owe per month if you got a loan from them and asks for your name, email address, and phone number.

You might fill in the contact form, but then have second thoughts. Do you really want to tell this company how much you're worth or how in debt you are? You change your mind and close the page before clicking the Submit button and agreeing to Quicken's privacy policy.

But it's too late. Your email address and phone number have already been sent to a server at "murdoog.com," which is owned by NaviStone, a company that advertises its ability to unmask anonymous website visitors and figure out their home addresses. NaviStone's code on Quicken's site invisibly grabbed each piece of your information as you filled it out, before you could hit the "Submit" button.

During a recent investigation into how a drug-trial recruitment company called Acurian Health tracks down people who look online for information about their medical conditions, we discovered NaviStone's code on sites run by Acurian, Quicken Loans, a continuing education center, a clothing store for plus-sized women, and a host of other retailers. Using Javascript, those sites were transmitting information from people as soon as they typed or auto-filled it into an online form. That way, the company would have it even if those people immediately changed their minds and closed the page. (It's yet another way auto-fill can compromise your privacy.)



NaviStone is an Ohio-based startup in the business of identifying “ready to engage” customers and matching “previously anonymous website visitors to postal names and addresses.” It says it can send postcards to the homes of anonymous website shoppers within a day or two of their visit, and that it’s capable of matching “60-70% of your anonymous site traffic to Postal names and addresses.”

In yesterday’s report on Acurian Health, University of Washington law professor Ryan Calo told Gizmodo that giving users a “send” or “submit” button, but then sending the entered information regardless of whether the button is pressed or not, clearly violates a user’s expectation of what will happen. Calo said it could violate a federal law against unfair and deceptive practices, as well as laws against deceptive trade practices in California and Massachusetts. A complaint on those grounds, Calo said, “would not be laughed out of court.”



How a Company You've Never Heard of Sends You Letters about Your Medical Condition

In the summer of 2015, Alexandra Franco got a letter in the mail from a company she had never heard ...

[Read more](#)

There are at least 100 sites using NaviStone's code according to Builtwith.com, a service that tells you what technologies sites employ. We visited dozens of them to see the code in action. The majority of sites captured visitors' email addresses only, but some sites also captured their home addresses and other entered information.

(To see it in action for yourself, check out our tutorial at the end of this post.)

Only one site of the dozens we reviewed, Gardeners.com, explicitly revealed in its privacy policy what it was doing. It read, "Information you enter is collected even if you cancel or do not complete an order." The rest of the sites had the usual legalese in their policies about using standard tracking tech such as cookies and Web beacons, which did not describe the way this particular information capture works.

We sent media inquiries to dozens of sites about why and how they are using the information they're capturing. Two responded. Quicken Loans did not respond to multiple media inquires.

Road Scholar, a non-profit that arranges educational travel and had NaviStone's code on its site collecting email addresses before users hit "submit," told us it

uses the NaviStone tool on its website “primarily to re-activate inquirers who have already expressed an interest in Road Scholar and are already on our mailing list.”

A spokesperson for home goods company Wayfair, which was using the Navistone tool on its clothing site JossandMain.com to collect email addresses, told us that the company is “committed to upholding the highest standards for responsible marketing practices across all channels.”

“We do not email users who have not formally submitted their email address to our site,” Wayfair spokesperson Susan Frechette wrote in an email. “We work with NaviStone to support our direct mail programs.”

We asked whether email addresses are collected in order to identify the person and try to find out their home address in order to send them direct mail. Email addresses, after all, much like mobile phone numbers and social security numbers, have become a unique identifier that can be used as a key to unlock other information about us. Frechette declined further comment and referred us to NaviStone.

NaviStone wasn’t keen to reveal how it unmask anonymous website visitors, saying that its technology is proprietary and awaiting a patent. Allen Abbott, NaviStone’s chief operating officer, wrote via email that NaviStone doesn’t “use email addresses in any way to link with postal addresses or any other form of PII.” He said the company’s primary business is helping their clients send personalized direct mail.

“Rather than use email addresses to generate advertising communications, we actually use the presence of an email address as a suppression factor, since it

indicates that email, and not direct mail, is their preferred method of receiving advertising messages,” Abbott wrote.

At least one other company is known to monitor the things you don’t send: Facebook takes note of the existence of status messages that you compose but don’t post. But this goes beyond that. In some cases, the companies using NaviStone code didn’t have an existing relationship with their visitors and were collecting contact information those consumers had ultimately decided not to give them.

We decided to test how the code works by pretending to shop on sites that use it and then browsing away without finalizing the purchase. Three sites—hardware site Rockler.com, gift site CollectionsEtc.com, and clothing site BostonProper.com—sent us emails about items we’d left in our shopping carts using the email addresses we’d typed onto the site but had not formally submitted. Although Gizmodo was able to see the email address information being sent to Navistone, the company said that it was not responsible for those emails.

Businesses seem to be doing all they can to strip away consumers’ ability to anonymously browse the Web, sacrificing privacy at the altar of commerce. And it’s illustrative of the way your sense of control online can be an illusion, the “submit” feature becoming just another placebo button.

As a result of our reporting, though, NaviStone says it will no longer collect email addresses from people this way.

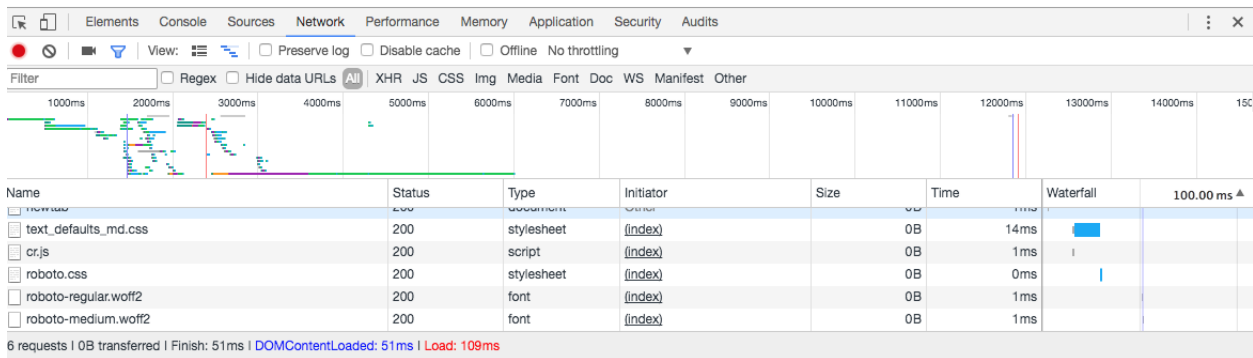
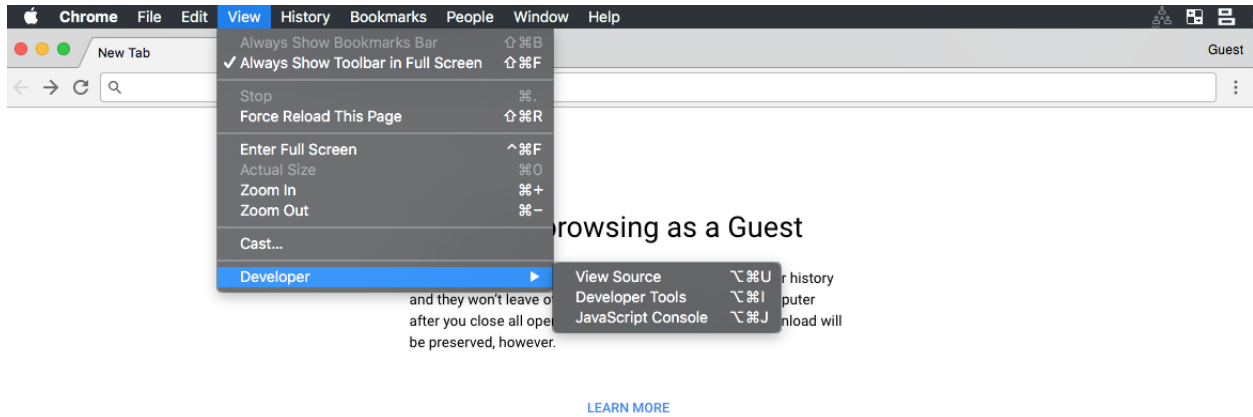
“While we believe our technology has been appropriately used, we have decided to change the system operation such that email addresses are not captured until the visitor hits the ‘submit’ button,” Abbott wrote.

Alternatively, if you don’t trust sites not to collect your information this way, consider using a tool such as UBlock Origin that prevents invisible claws from descending into the toy chest of data in your browser.

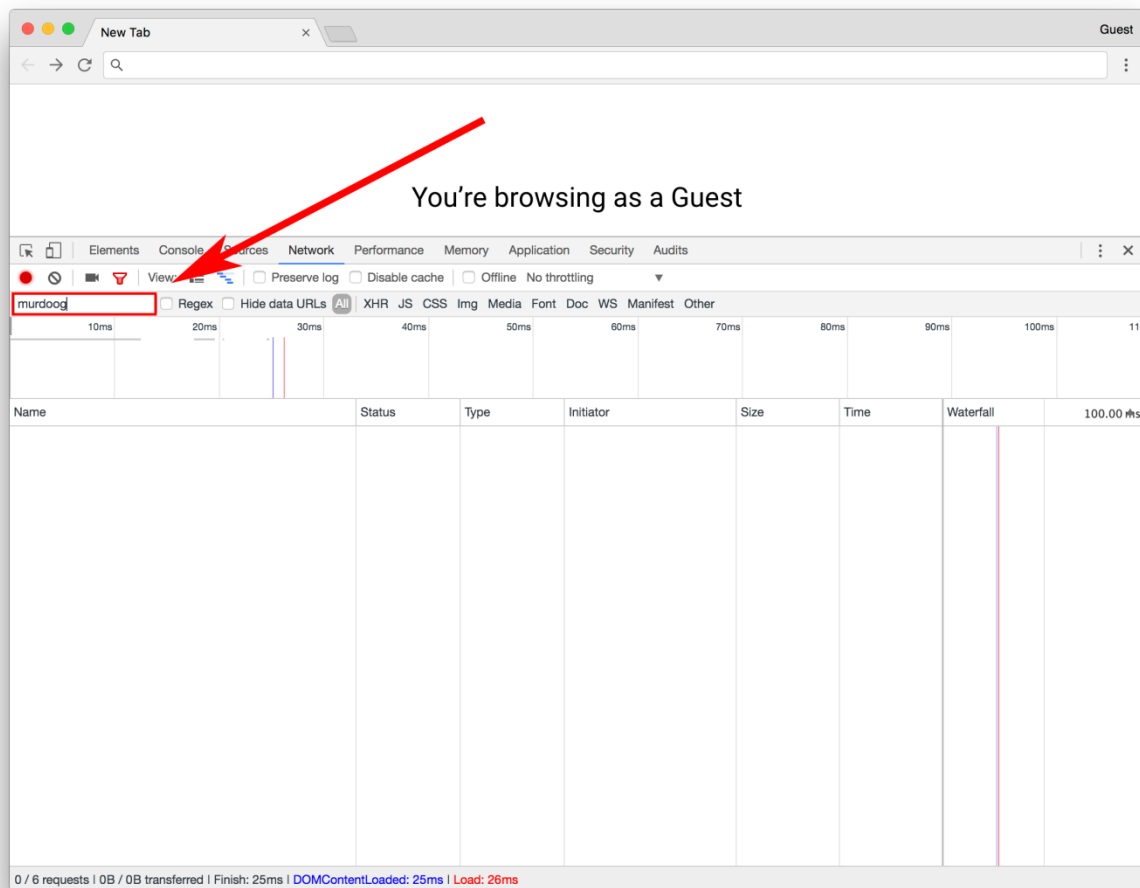
Want to see this happen for yourself?

Web browsers have developer tools that let you see what information a website is transmitting and receiving—both the visible and invisible stuff. You can use these developer tools to see this trick. These instructions are for Chrome but the same basic technique should work on Firefox and Safari too, with small differences in the interface.

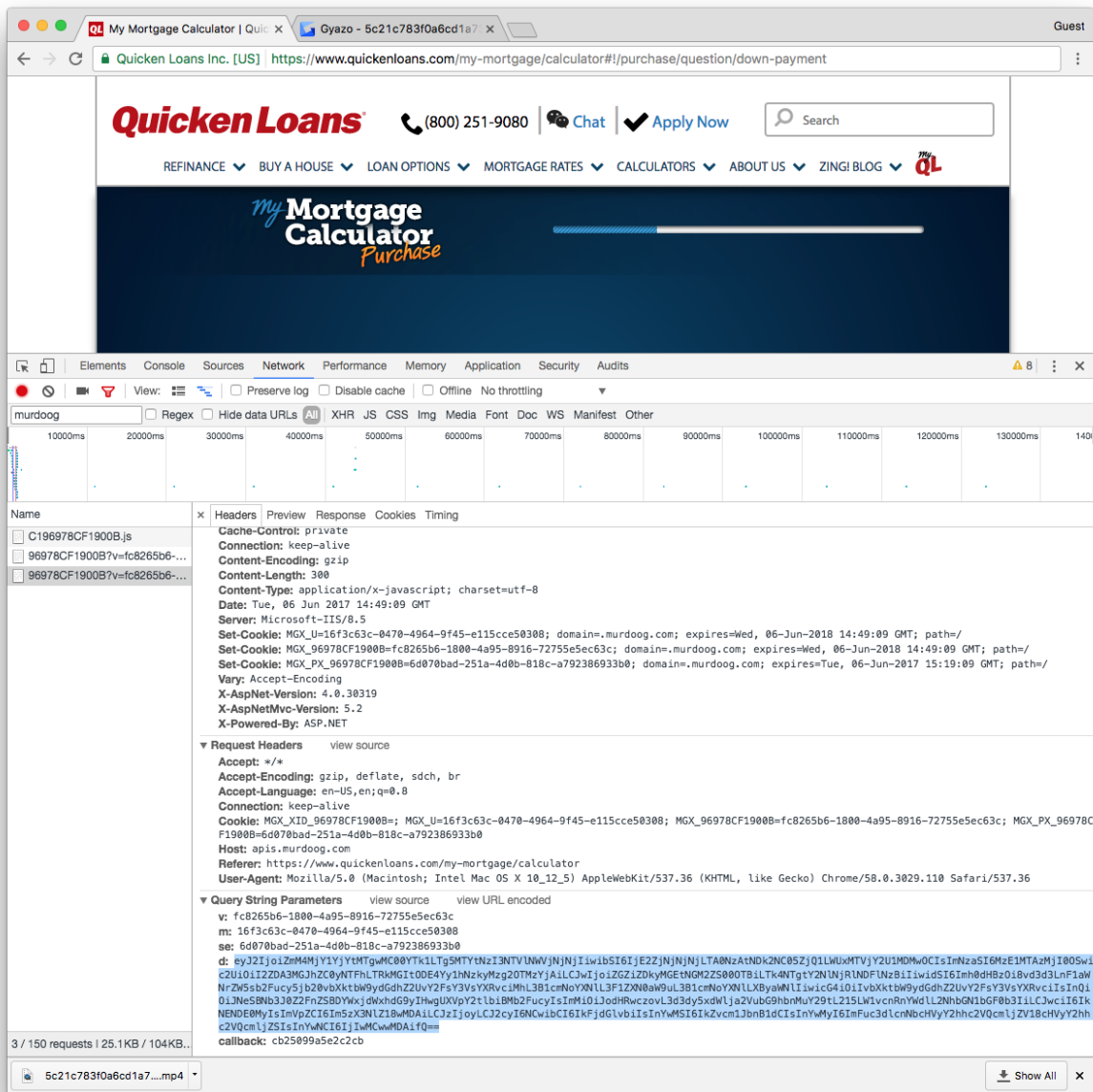
1. In the Chrome menu, go to “View,” then “Developer,” and select “Developer Tools.”



2. The developer tools should pop up either from the bottom of your browser or the side. To see all the data coming and going from the browser, select the Network tab. You just want to monitor the traffic between the browser and murdoog.com, a website affiliated with NaviStone, to which it is sending the captured information. In the filter in developer tools, type “murdoog.”



3. After our reporting, NaviStone stopped collecting information pre-Submit on most of the sites it was working with. But as of publication time, it was still active on the Quicken Loans mortgage calculator contact page, so head there to check it out.



4. You have to choose “Refinance” or “Purchase” and then hand over some financial information. If you qualify, you’ll get to a contact page and need to fill in the requested information: name, phone number, and email address. Be creative because this information is going to be captured. Each time you hit the tab button, or move to a new field, you should see data being sent to murdoog.com. (If not, you may have a blocker enabled.)

The screenshot shows a web browser window with the Quicken Loans mortgage calculator. The main heading is "How much do you have for a down payment?" with a large green button labeled "\$ 100,000" and the text "Enter a percent instead". A red arrow points from the text in the instructions to the "Headers" tab in the developer tools. The developer tools show the "Headers" tab selected, displaying the "Request Headers" for a GET request to "murdoog.com". The headers include "Accept: */*", "Accept-Encoding: gzip, deflate, sdch, br", "Accept-Language: en-US,en;q=0.8", "Connection: keep-alive", "Cookie: MGX_U=00418499-7748-498c-aec3-637daaf7e680; MGX_96978CF1900B=f6d99ab5-c7d3-40ff-9c7a-0a0d4e3e88a2; MGX_PX_96978CF1900B=2afd8b31-18f5-436c-b81e-70ece883d141", "Host: apis.murdoog.com", "Referer: https://www.quickenloans.com/my-mortgage/calculator?qlsource=nav", "User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_12_5) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/58.0.3029.110 Safari/537.36", and "X-AspNet-Version: 4.0.30319". The "Query String Parameters" section shows "v: f6d99ab5-c7d3-40ff-9c7a-0a0d4e3e88a2", "m: 00418499-7748-498c-aec3-637daaf7e680", and "se: 2afd8b31-18f5-436c-b81e-70ece883d141".

eyJ2IjoiZjZkOTlhYjUtYzdkMy00MGZmLTljN2EtMGEwZDRlM2U4OGEyIiwibSI6IjAwNDE4NDk5LTc3NDAtNDkwYy1hZWZmLTkyZnRlYWY3ZTY4MCIsImNzaSI6MzMtMTAzMjI0OSwic2UiOiIyYWZkOGIzMS0xOGY1LTQzMmtYjgxZS03MGVjZTg4M2QxNDEiLCJwIjoiOTkyYjE4MGIItNGU1Ny00YzZiLWFmOWUtODAxOTYyMTJiMjg2IiwidSI6Imh0dHBzOi8vd3d3LnF1aWNrZW5sb2Fucy5jb20vbXktbW9ydGdhZ2UvY2FsY3VsYXRvcj9xbHNvdXJjZT1uYXYyIS9wdXJjaGFzZS9xdWVzdGlubi9kb3duLXBheW1lbniQiLCJwbii6Ii9teS1tb3J0Z2FnZS9jYWxjdWxhdG9yIiwidCI6Ik15IE1vcnRnYWdlIEENhbGN1bGF0b3IgfCBRdWlja2VuIEExvYW5zLiwiYyI6Imh0dHBzOi8vd3d3LnF1aWNrZW5sb2Fucy5jb20vbXktbW9ydGdhZ2UvY2FsY3VsYXRvciIsInByIjoiQ0Q0MTQzLiwiZWlkIjoibnNfc2VnXzAwMCIsInMiOiJMsInZzIjoxLCJsIjoiQWN0aW9uIiwidjAxIjoiRm9ybUlucHV0IiwidjAzIjoiYW5zd2Vyc1twZXJjaGFzZVByaWNlXXxwdXJjaGFzZVByaWNlIiwidjA0IjoiMTUwLDAwMCJ9

6. That incomprehensible-looking block of text is encoded using a common web technique called Base64 encoding. Usually it's used to convert binary data like images into strings of text, making them easier to send. Copy the text after the “d:” as shown below and paste it into this [online converter](https://www.base64decode.org).

The screenshot shows a web browser window with the address bar displaying <https://www.base64decode.org>. The page has a green header with the title "BASE64 Decode and Encode" and a sub-header "Have to deal with Base64 format? Then this site is made for you! Use the super simple online form below to decode or encode your data. If you're interested about the inner workings of the Base64 format, just read the detailed description at the bottom of the page. Welcome!". Below the header, there are tabs for "Decode", "Encode", and "Other tools". The "Decode" tab is active, showing a form with a text input field containing a long Base64-encoded string. Below the input field, there are buttons for "< DECODE >", "UTF-8", and "You may also select input charset.". There are also checkboxes for "Live mode OFF" and "UPLOAD FILE". Below the form, there is a section titled "Certified Scrum Master Training" with a "Collab" logo. Below that, there is a section titled "Details of the encoding" with a sub-header "Base64". The text in this section explains that Base64 is a generic term for a number of similar encoding schemes that encode binary data by treating it numerically and translating it into a base 64 representation. It also mentions that Base64 encoding schemes are commonly used when there is a need to encode binary data that needs to be stored and transferred over media that are designed to deal with textual data. Below this, there is a section titled "Design" which explains that the particular choice of characters to make up the 64 characters required for base varies between implementations. The general rule is to choose a set of 64 characters that is both part of a subset common to most encodings, and also printable. This combination leaves the data unlikely to be modified in transit through systems, such as email, which were traditionally not 8-bit clean. For example, MIME's Base64 implementation uses A-Z, a-z, and 0-9 for the first 62 values. Other variations, usually derived from Base64, share this property but differ in the symbols chosen for the last two values; an example is UTF-7.

On the right side of the page, there are two advertisements. The top one is for a "2017 RAM 1500 EXPRESS QUAD CAB 4X4 6'4\" BOX V6 ENGINE" with a price of "\$149 a month" and a "VIEW INCENTIVES" button. The bottom one is for "QUICKEN LOANS URGES AMERICAN'S TO SWITCH TO A 15-YEAR FIXED" with a "Tap Anywhere To Calculate New House Payment" button.

7. What you should see amid everything else is the information you just typed into the form. It was sent to murdoog.com, a site registered to NaviStone.

This story was produced by Gizmodo Media Group's Special Projects Desk.

Email senior reporter Kashmir Hill at kashmir.hill@gizmodomedia.com and data reporter Surya Mattu at surya.mattu@gizmodomedia.com.

Master Service Agreement

This Agreement, effective _____ (the “Effective Date”) sets the terms upon which NaviStone® Inc. (“NaviStone”), will provide _____ (“Client”) access to postal names and addresses for engaged browsers on Client’s website (the “Website”), for both prospecting and reactivation purposes, via “merge ready” lists, hotline data feeds, and/or NaviStone’s turnkey postcard program, using proprietary modeling techniques, browsing data and all other related development tools and services of NaviStone.

NaviStone Services:

NaviStone shall:

- 1) Provide to Client a single line of JavaScript to enable data capture (the “JavaScript Code”). The Client will place the JavaScript Code on every page of the Website. NaviStone will work with Client’s technical team to ensure proper application of the JavaScript Code;
- 2) Where Reactivation services are desired, work with Client to determine and implement the best method for matching website browsers to Client’s existing customer base;
- 3) Perform initial quality control work to ensure that data capture is accurate and comprehensive, and that the JavaScript Code does not materially impact website performance;
- 4) Collect web browsing behavior 24x7x365 and store the collected data in a secure cloud environment;
- 5) Score all website visitors based on browsing activity to ensure that only fully engaged browsers are selected for prospecting and/or reactivation;
- 6) Provide prospecting files with postal addresses, net of house file names provided to NaviStone, of web visitors that are qualified as high response prospects, for one time use by Client;
- 7) Select qualified reactivation names from Client house file for inclusion in Client mailings.
- 8) When applicable, execute on Client’s behalf a Postcard Program, including audience development, creative and copy, printing and mailing, and first class postage; and
- 9) Provide reporting on all postcard activity and results.

Client Responsibilities:

Client shall:

- 1) Install the JavaScript Code on each page of the Website;
- 2) Where reactivation services are desired, work with NaviStone’s technical team to determine and implement the best method for matching website browsers to Client’s existing customer base;
- 3) Provide access to Google Analytics, or an alternative reporting source, to facilitate quality control activities once the JavaScript Code is applied to the Website;
- 4) Provide NaviStone a copy of Client customer file to allow for the suppression of existing Client customers from Prospect Lists;
- 5) For Postcard Programs, provide creative and copy assets required to set up variable content printing based on site visitor’s browsing behavior;
- 6) For Postcard Programs, purchase a minimum average of 6,250 postcards per month, on the terms provided in this Agreement, and at least 25,000 postcards within the first 120 days of this Agreement (“Purchasing Obligations”).;

- 7) For Postcard Programs, provide NaviStone with a target return on advertising spend, and a monthly budget. NaviStone will recommend changes to the budget based on results each month; and
- 8) For Campaign Mailings, purchase a minimum of twenty five thousand (25,000) prospecting or reactivation names within one hundred twenty (120) days of the start of data collection ("Purchasing Obligations").

Term and Termination: This Agreement will have a term of one (1) year from the Effective Date (the "Term") and shall automatically renew for additional one (1) year terms unless terminated by either party as provided in this Section. Upon termination, the terms of this Agreement shall terminate, except those sections that you would expect to survive termination.

Either party may terminate this Agreement for any reason upon thirty (30) days' written notice. In the event that Client terminates this Agreement prior to fulfilling its Purchasing Obligations, Client agrees to immediately pay to NaviStone the full amount that NaviStone would be due if Client had fulfilled its Purchasing Obligations. Further, if Client fails to meet the Purchasing Obligations but does not terminate this Agreement, NaviStone will invoice Client for the full amount of its Purchasing Obligations, less amounts previously invoiced, and will have no further obligations under this Agreement until the Purchasing Obligations are satisfied.

After the initial 120 days of Postcard mailings (minimum of 25,000 postcards mailed), Client and NaviStone will review the results of the Postcard Program, and if Client is dissatisfied with the results, Client may terminate this Agreement with no additional financial obligation beyond its Purchasing Obligation.

Upon termination or expiration of this Agreement, NaviStone will archive all Client Data on NaviStone's cloud servers for a period of six (6) months.

Fees: Company agrees to pay NaviStone fees as detailed in Addendum A.

Pricing is subject to change at the sole discretion of NaviStone. NaviStone will provide Client thirty (30) days' notice prior to any price increase.

Payment of any sales taxes, whether billed at the time of service or that may be imposed by a taxing authority at a later time, are the responsibility of the Client.

If payment is not received within fifteen (15) days of the due date, Client will owe a service fee of 2% of the overdue invoice. Client will be charged an additional fee of 2% for each additional month the invoice remains unpaid.

Use of Client Data:

Client data is defined as all website browsing data collected by NaviStone using the JavaScript Code installed by Client on Client's website.

NaviStone shall use Client Data solely to perform its obligations pursuant to this Agreement or pursuant to any other written arrangement with Client. NaviStone shall not disclose Client Data to any third party except as reasonably required for NaviStone to provide its obligations under this Agreement or as required by law or court order.

Intellectual Property:

NaviStone retains all intellectual property rights relating to the NaviStone Technology (as defined below). As between the parties, NaviStone (and its licensors) owns all right, title and interest, in and to the NaviStone Technology, any updates, derivatives, and enhancements thereto, and all copyrights, patents, or trademarks embodied or used in connection therewith. "NaviStone Technology" means the NaviStone proprietary technology by which the Services are delivered, including the JavaScript Code and all other software, hardware, products, dashboard, platform, processes, metrics, analytics, reports, algorithms, user interfaces, know-how, techniques, designs, and other tangible

or intangible technical material or information. Nothing in this Agreement shall be deemed to confer any rights to any intellectual property of the other party except as expressly set forth herein or in other written agreements between the parties.

Non-Disclosure:

Each party may be furnished material and data that is non-public and confidential in nature of the other party. In addition, Client may become familiar with various trade secrets that are integrally involved with the NaviStone service offerings. Both parties agree to keep each other's confidential information, including but not limited to its business processes, data, customer lists, pricing, and other business sensitive information, strictly confidential. Each party agrees that no confidential information of the other party will be shared with any third party, without express written permission of the disclosing party, unless required by a court of law.

Assignment:

Neither party may assign or transfer this Agreement or any of its rights or obligations hereunder without the other party's written consent, such consent to not be unreasonably withheld, provided, however, that either party may assign the Agreement without the other party's consent if such assignment is made as part of the purchase of all or substantially all of that party's business or as part of a merger, consolidation or reorganization thereof.

Limitation of Liability and Disclaimer:

In no event, shall NaviStone's total liability under this Agreement exceed the amount paid by Client to NaviStone during the six months prior to the incident giving rise to liability.

NAVISTONE MAY NOT BE HELD LIABLE TO CLIENT, OR TO ANY THIRD PARTY, FOR ANY INDIRECT, INCIDENTAL, SPECIAL, CONSEQUENTIAL, EXEMPLARY OR PUNITIVE DAMAGES (INCLUDING LOST OR ANTICIPATED REVENUES OR PROFITS) ARISING FROM ANY CLAIM RELATING DIRECTLY OR INDIRECTLY TO THE AGREEMENT, WHETHER BASED ON WARRANTY, CONTRACT OR TORT (WHETHER UNDER A THEORY OF NEGLIGENCE, STRICT LIABILITY OR OTHERWISE), EVEN IF AN AUTHORIZED REPRESENTATIVE OF NAVISTONE IS ADVISED OF THE LIKELIHOOD OR POSSIBILITY THEREOF. CLIENT ACKNOWLEDGES THAT NAVISTONE HAS RELIED UPON THE LIMITATIONS ON LIABILITY SET FORTH IN THIS AND, BUT FOR THEIR INCLUSION HEREIN, WOULD NOT HAVE ENTERED INTO THE AGREEMENT.

JAVASCRIPT CODE AND OTHER SERVICES ARE PROVIDED BY NAVISTONE ON AN "AS-IS" BASIS. EXCEPT AS OTHERWISE SPECIFICALLY STATED IN THIS AGREEMENT, ALL WARRANTIES, WHETHER ORAL OR WRITTEN, EXPRESS OR IMPLIED OR CONTRACTUAL OR STATUTORY, ARE EXPRESSLY DISCLAIMED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Indemnification:

To the extent not prohibited by law, Client will forever indemnify, defend, and hold NaviStone and its subsidiaries, affiliates, related companies, officers, directors, employees, agents, representatives, partners, and licensors (the "NaviStone Entities") harmless from and against any and all liabilities, damages, losses, claims, costs and expenses (including attorneys' fees) related to: (i) Client's violation of any applicable federal, state or local laws, regulations, rules and judicial and administrative decisions, including any applicable privacy and data protection laws (ii) Client's violation of any applicable privacy policy or any other privacy or confidentiality rights of any third party; (iii) a third-party claim of misappropriation or infringement of any intellectual property right in connection with NaviStone's use of any Client Data in accordance with this Agreement; and (iv) any misrepresentation by Client.

Representation and Warranties:

NaviStone represents and warrants that it shall provide the Services in a professional and workmanlike manner in accordance to its standard of care and in compliance with applicable United States laws and regulations.

Client represents and warrants that it (i) is in full compliance with all applicable laws and marketing regulations regarding the privacy of its customers and the collection, use and disclosure of its customers' information and (ii) has procured all necessary approvals required for the performance of this Agreement, including Navistone's use of Client data. Client further warrants that the Website includes a clear and conspicuous link to its privacy policy on its customer-facing web page and that such privacy policy contains a provision substantially similar to the following:

"We may from time to time contract with third party vendors to provide ads to our customers on our behalf via the Internet or to send direct mail or catalogs to customers whom we think may be interested in our products or services. In order to do so, such vendor may collect anonymous information about your visits to our website using a "cookie". A cookie is a small piece of data that is sent to your browser or mobile device by websites, mobile apps, and advertisements that you access or use. This data is stored on your browser or mobile device and helps websites and mobile apps to remember things about you to improve your experience with the website. Third-party vendors may then pool the anonymous information that they collect from our website with other sources of information, which may include your name and mailing address, for purposes of determining whether you might be interested in receiving direct mail or a catalog. If you do not wish for cookies to be placed on your computer, most web browsers permit you to prevent that from taking place. However, please keep in mind that these technologies are an important part of how the website works; removing, rejecting or limiting the use of cookies or other similar technologies might affect the availability and functionality of the website. To opt-out of receiving our direct mail or catalogs, you may send us an email at [CLIENT CUSTOMER SERVICE EMAIL ADDRESS] or call us at [CLIENT CUSTOMER SERVICE PHONE NUMBER]".

Choice of Law and Venue:

This Agreement and any action related thereto will be governed by the laws of the State of Ohio without regard to or application of its conflict of law provisions or your state or country of residence. Any disputes that arise under or in relation to this Agreement shall be resolved in the state and federal courts in Hamilton County, located in the state of Ohio. Client expressly consents to personal jurisdiction of and venue in such courts and waives any objection as to inconvenient forum.

SIGNATURE PAGE FOLLOWS

Acceptance:

The undersigned hereby represent that they are duly authorized to execute this Agreement on behalf of their respective organizations.

Company Address City, State, Zip	NaviStone Inc. 1308 Race Street Cincinnati, OH 45202
Signature of Authorized Signer	Signature of Authorized Signer
Print Name and Title	Print Name and Title
Date	Date

EXHIBIT 2

**UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF PENNSYLVANIA**

ASHLEY POPA, individually and on behalf
of all others similarly situated,

Plaintiff,

v.

HARRIET CARTER GIFTS, INC., a
Pennsylvania corporation, and NAVISTONE,
INC., a Delaware corporation,

Defendants.

Case No. 2:19-cv-00450-WSS

DECLARATION OF CHRIS LUDWIG

Pursuant to 28 U.S.C. § 1746, I, Chris Ludwig, declare and state as follows:

1. I am over the age of eighteen and competent to make this declaration. I make this declaration based on my personal knowledge and, if called as a witness, I could and would testify competently to the matters stated herein.

2. I am the engineering manager of Defendant NaviStone, Inc. (“NaviStone”); I have held this position from 2016 to the present.

3. While at NaviStone, I have been involved in the development of all of our data ingestion code from a very early stage. I refactored and maintained our JavaScript code and ingestion API (Application Programming Interface), and developed new software capabilities, as well as contributing to the continued development of subsequent revisions.

4. I have worked closely with NaviStone’s Chief Technology Officer, Tom White, in managing and designing all changes to those systems. Performing this work for NaviStone requires me to be very familiar with NaviStone’s product offerings and how they work. This includes having a detailed knowledge of NaviStone’s JavaScript code at issue in this lawsuit and how it

operates and interacts with services provided by NaviStone's service partners, including Neustar, Inc. ("Neustar") and American Computer Group d/b/a Computech ("Computech").

5. Unless indicated otherwise, the information contained in this declaration is based upon my personal knowledge.

6. I have reviewed the Declaration of Larry Kavanagh dated November 13, 2020 and the declaration of Greg Humphreys dated November 13, 2020, which are being filed along with my declaration. The facts set forth in both concerning the operation of the NaviStone software and the services NaviStone provides to its clients are true based on my personal knowledge.

7. Although some of the statements in this declaration are in the present tense for ease of communication, all transmissions to NaviStone from web browser instances visiting the Harriet Carter website ended by no later than October 31, 2020.

8. Unless otherwise indicated, the statements set forth in this declaration relate to NaviStone's services to Harriet Carter and apply to the entire period when NaviStone provided services on behalf of Harriet Carter.

NAVISTONE'S SERVICES TO HARRIET CARTER

9. In September or October 2016, NaviStone provided Harriet Carter with JavaScript code that Harriet Carter incorporated into pages of its retail website, www.harrietcarter.com (the "Harriet Carter website" or the "website").

10. NaviStone did not (and does not) have the ability to incorporate its code into a client's website, including Harriet Carter's website; nor can it remove the code from the client's website at the termination of a business relationship with a client. Only the client has the ability to install or uninstall any JavaScript code on its own website which, once installed, becomes a part of the client's website pages. Working with NaviStone, the client determines the pages on which to install NaviStone's code and understands that the code causes certain communications to be sent from the visitor's web browser directly to NaviStone.

11. Once installed by the client, NaviStone's code begins to run when the website page, which includes the code, is fully rendered and loaded in the visitor's web browsing software. This was an intentional design decision, as we did not want the code to begin running until the website page being visited had been fully delivered to the browsing software. To insure this, we programmed an additional delay in the operation of the code of one (1) second.

12. Because the code is part of the web page on which it is installed, it stops running as soon as the visitor leaves that page. The next section of this declaration describes those limited instances in which the visitor's web browser transmits information directly to NaviStone's servers, which are located in Virginia.¹

THE OPERATION OF THE CODE

13. **Step One.** After a page is fully rendered and loaded in the visitor's web browser, the code obtains information from that loaded page and sends it directly to NaviStone servers located in Virginia and hosted by Amazon Web Services.

14. **Step One Details.** The process described in Paragraph 13 occurs only *after* the client's web server has received the web page request from the visitor's web browser, and after the client's web server has fully delivered the requested page and it is presented as a fully formed web page in the visitor's web browsing software. NaviStone does not have access to or otherwise obtain, view, or capture the communication from the visitor's web browsing software to the website server which requested the visited web page. This is true whether or not that page is being navigated to from another website or from another page within the client's website. Likewise, the code does not have access to otherwise obtain, view, or capture the response from the website server to the web browser. The code installed by Harriet Carter's on the pages of its website instructed the web browser to send this information to NaviStone once the web page is fully loaded.

¹ NaviStone accesses the information sent to its servers in Virginia remotely from its offices in Ohio.

15. **Step One Information Collection and Communication.** In connection with step one, the web browser sends to NaviStone limited categories of information from the loaded pages of the website page on which it is installed. The information on those loaded pages originates entirely from Harriet Carter and its third-party service providers. For example, from a loaded product page, the browser sends to NaviStone the web address of the page (which may include search terms used to reach the page), item numbers, the web address of product images, and the pathname by which the visitor arrived at the page. From loaded shopping cart pages, the web browser sends to NaviStone information such as the product name, the product identifier, product quantity, unit price, the web address of the product image, shipping and tax charges, and product attributes.

16. **Step Two.** After a page has been fully rendered in the visitor's web browser and information about the page has been sent by the web page to NaviStone's server, the visitor's web browser thereafter sends information to NaviStone in response to a "click event" which may occur on the page. That single click event which causes this communication is the visitor's clicking on an "add to shopping cart" button if one exists on the page. No other "click events" caused information to be sent to NaviStone.

17. **Step Two Details.** The "add to cart" click event causes a communication to be sent to NaviStone by the web browser when the user clicks an add to cart button. JavaScript allows the web page to recognize when defined events occur, and to take an action in response to those events such as this "add to cart" click event. One such response, for example, is to cause the visitor's web browser to send information to a web server, including the web server of a third party like NaviStone. The "add to cart" button being clicked on the Harriet Carter website (or any other website) may have other actions associated with it, but these are independent of and not related to the action of sending information to NaviStone. So, for example, a user clicking on an "add to cart" would likely *also* trigger a separate communication to Harriet Carter's website server with

instructions about what to place in an online shopping cart; NaviStone, however, does not have access to that separate communication to Harriet Carter, and the communication to NaviStone does not depend in any way on whether the click has communicated at all with the Harriet Carter server. These are entirely independent communications, and they can happen in any order.

18. **Step Two Information Communication.** The click event described above causes a signal to be sent from the web browser to NaviStone that “an add to cart button has been clicked on this page.” It contains no further information about the event. NaviStone’s code does not have access to any communication to the Harriet Carter server (or anyone else) triggered by the “add to cart” click event.

19. **Step Three.** After a page has been fully rendered in the visitor’s web browser, the visitor’s web browser sends information to NaviStone’s server if a “change event” has occurred relating to certain form fields. Specifically, when a person tabs out of the form field, the code will detect whether the content of the form field has changed.

20. **Step Three Details.** After June 20, 2017, the “change event” described above causes the number “1” to be sent to NaviStone if the content of the form field appears to be formatted like an email address. The content of the form field was not transmitted to NaviStone. It is my understanding that the Plaintiff browsed the Harriet Carter website in 2018, which is after the transmission of form field information ceased.

ADDITIONAL INFORMATION

21. The information sent to NaviStone is in the form of raw data. This raw data is stored separately for each NaviStone client, and NaviStone never combines the raw data of different clients. Within each client’s raw data, the information received by NaviStone is associated with the anonymous cookie ID that is created for each visitor to the client’s website. This cookie ID is set under the domain of client’s website and, as a result, is a “first party” cookie. For example, the cookie ID set in connection with NaviStone’s work for Harriet Carter is a Harriet Carter-domain

cookie ID, and the ID is unique to Harriet Carter. While the code also sets a NaviStone-domain cookie ID that is the same across multiple domains, this ID is not used by NaviStone for any purpose.

22. The NaviStone code sets a unique and different anonymous client-domain ID and cookies on each browser instance on each device visiting the client’s website. NaviStone has no way of knowing, nor does it attempt to learn, whether those anonymous IDs are in any way connected or related to the same individual or household. They appear to NaviStone as different anonymous browsers instances each with a unique ID and unique MGX cookies.

23. NaviStone personnel do not access the “raw data” to obtain, derive, or otherwise ascertain personal information about website visitors. Rather, reports from the raw data are automatically generated on a nightly basis as a summary for each client-domain anonymous ID (the “summaries”), and those summaries have no personally identifiable information of any kind.

24. The summaries present high-level, anonymous information including the number of site visits made by each anonymous visitor for which a NaviStone cookie ID has been set, the number of months it has been since an anonymous visitor went to the client’s website, the number of product pages viewed by that visitor, and the number of carts into which the anonymous visitor put items. These high-level data points for Harriet Carter are accurately listed in the declaration of Larry Kavanagh.

25. In short, NaviStone never accesses or uses the raw data or summaries to learn their identities, mailing addresses, or email addresses.

SCORING ANONYMOUS BROWSER IDS

26. As noted above, when the NaviStone code first runs on a browser instance visiting Harriet Carter’s website, the Harriet Carter website instructs the browser instance visiting the site to create an anonymous ID for the visitor; to send that ID to NaviStone; and to put that ID into a cookie.

27. As also previously explained, NaviStone summarizes non-personally identifiable information associated with each anonymous ID (which are unique to Harriet Carter) and creates a score that indicates the likelihood that a visitor will respond to a piece of direct mail.

28. NaviStone uses only data sent to it by Harriet Carter's web pages to create a score for anonymous Harriet Carter's visitors.

29. Only 5-10% of visitors to most websites score high enough that it makes economic sense for the retailer to send a postcard.

30. By excluding 90-95% of visitors from consideration, NaviStone eliminates wasteful mailings to website visitors, which reduces needless paper use and prevents the vast majority of visitors from receiving a mailing.

ANONYMOUS COOKIE-SYNCING

31. To facilitate the creation of a mailing list, the web browser sends NaviStone's anonymous, client-specific visitor IDs, and nothing else, to a data provider, Neustar, that has independently built a "telephone book" of mailing addresses associated with Neustar's own cookie IDs.

32. If Neustar has previously placed a cookie on the same browsing instance being used to visit Harriet Carter, Neustar sends NaviStone a signal—equivalent to a "yes" or "no"—to indicate whether it has a mailing address associated with Neustar's own ID on the same browser instance. NaviStone is never provided with or otherwise learns the Neustar ID, or with any names or addresses associated with the Neustar ID, nor is this information provided to its clients.

33. This practice is called "cookie syncing," and is a commonplace practice for retail and commercial websites. With IDs synced, Neustar can then create a list of mailing addresses corresponding to a list of synced anonymous NaviStone IDs.

34. Cookie syncing can only happen when Neustar has its own pre-existing cookie ID on the visitor's web browser instance at the time the NaviStone code sends its anonymous, client-specific ID to Neustar for that same browser instance.

35. Because NaviStone's anonymous visitor ID (or "cookie") is set on a browser instance and is not connected to any particular person, NaviStone has no way of knowing whether the "match" provided by Neustar is either accurate or reflects the actual identity or mailing address of the person who was visiting the client's website at the time that cookie was set. The connection between NaviStone's anonymous ID and a name or mailing address, in other words, is inferential only, and subject to error. NaviStone simply has no way of knowing if the name or mailing address synced by Neustar is accurate. Moreover, as noted earlier, those names and addresses are never revealed to NaviStone.

36. For purposes of clarity, a browser instance is created when a person launches a web browsing program, *e.g.*, Safari, on his or her computer, smartphone, or tablet and then surfs the web with that browser. If that same person launches another browser, *e.g.*, Chrome, on the same device, a different browser instance is created. Likewise, if that same person launches one or more of these browsers on a different computer, smartphone, or tablet, each browser on each device creates a separate, different browser instance. Each browser instance will create a different, client-domain anonymous visitor ID for each client of NaviStone that the web browser instance visits, and that ID will be different for each client's web site.

37. To illustrate, if Individual A surfs the web on a personal computer using Safari, Chrome, and Opera (another browser), that individual would have three browser instances on that computer, and, if that person used each of those programs to visit Harriet Carter's website, NaviStone's code would set a different anonymous ID for each browser instance. Because NaviStone has no way of correlating those different anonymous IDs among or across the different browsers—or across multiple devices—it would appear to NaviStone as if (in this scenario) three

different individuals came to the Harriet Carter website, and NaviStone would never know that it was Individual A using any of these different browsers. If these browser instances then visited the website of another NaviStone client, they would each get new and different anonymous IDs tied to the second client's domain.

38. For added security and privacy protection, Neustar is not provided with the identity of the websites or clients associated with the client-specific, anonymous IDs sent to it by NaviStone or any of the browsing data associated with that ID. Further, NaviStone never shares or provides access to browsing data sent to it to anyone, including its client.

39. Based on my years of experience working in online marketing, this data separation—never allowing one party to possess both browsing data and names and addresses—is extremely rare among companies offering similar or comparable services.

40. Further, no data is shared or used between or among NaviStone's clients. No other client learns anything, directly or indirectly, from or about Harriet Carter's data, and Harriet Carter learns nothing, directly or indirectly, from or about other clients' data. Moreover, NaviStone never combines one client's data, *e.g.*, Harriet Carter's data, with the data of any other client, or uses the data of one client for purposes of providing services to another.

I declare under penalties of perjury under the laws of the United States that the foregoing is true and correct.

DATED: November 13, 2020

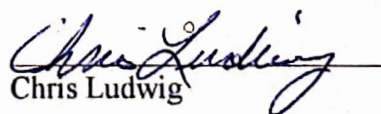

Chris Ludwig

EXHIBIT 3

**UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF PENNSYLVANIA**

ASHLEY POPA, individually and on behalf
of all others similarly situated,

Plaintiff,

v.

HARRIET CARTER GIFTS, INC., a
Pennsylvania corporation, and NAVISTONE,
INC., a Delaware corporation,

Defendants.

Case No. 2:19-cv-00450-WSS

DECLARATION OF GREG HUMPHREYS

Pursuant to 28 U.S.C. § 1746, I, Greg Humphreys, declare and state as follows:

1. My name is Greg Humphreys and have been retained by Defendant NaviStone, Inc. (“NaviStone”) as an expert in this case to provide opinions on the operation of NaviStone’s code (“Code”) on the Harriet Carter website. Specifically, I was asked to analyze, among other things, how NaviStone’s code collected web visitors’ interactions with the Harriet Carter’s website and the conditions necessary for NaviStone’s code to work. I was also asked to evaluate the conclusions, opinions, and methodology in the expert report of Michael Springer, an expert retained by Plaintiff Ashley Popa. My conclusions and opinions in connection with this engagement are accurately set out in the expert report I prepared (“Report”), attached as **Exhibit A**; an addendum to that Report, attached as **Exhibit B**; and the reply to Michael Springer’s report (“Reply Report”), attached as **Exhibit C** (collectively, the “Reports”). I believed the opinions and conclusions set out in those documents to be correct when I wrote them, and I believe them to be true now.

2. This declaration, including the attached reports, presents my professional opinions, observations, and conclusions based on my independent investigation of the facts and circumstances underlying the claims in this lawsuit. bringing to bear my years of education and experience in Computer Science as a student, in academia as an Assistant Professor at the University of Virginia, and in working for a wide array of businesses implementing technologies and services on the World Wide Web.

3. My professional opinions, observations, and conclusions are consistent with my understanding of how the NaviStone service and JavaScript code functioned during the time it was included in Harriet Carter's website, www.harrietcarter.com.

4. If called upon to testify on the matters stated herein, I could and would testify competently hereto.

EDUCATION AND EXPERIENCE

5. I am a computer scientist with expertise in large software systems, computer graphics, high performance computing, and web technologies. I am highly proficient at designing, testing, and implementing software spanning multiple levels of system architecture. I have published numerous peer-reviewed research papers and co-authored a book on physically-based rendering, for which I received an Academy Award in 2014.

6. My academic credentials, honors and awards, graduate student advising, and publications are set forth in my academic *curriculum vitae*, which is attached to my Report. This academic CV was last updated in 2007, and therefore certain dates are missing.

7. I received my B.S.E. in Computer Science, *magna cum laude*, from Princeton University in 1997. I received a Ph.D. from Stanford University in Computer Science with

Distinction in Teaching in 2002. I completed several courses towards an M.S. in Mathematics at the University of Virginia between 2005 and 2008 while I was teaching.

8. My current professional curriculum vitae is also attached to my Report. As one example of my work, I currently serve as a Senior Software Engineer for Twitch, where I am the technical lead for Twitch's "Extensions" project, an application development platform that allows third parties to create interactive experiences that extend the viewing experience for live video streams. I architected and implemented key components of this platform at all levels of the application stack. Because building a new development platform on a previously static web application required modifications to numerous systems across the company, I was also responsible for coordinating the development efforts and release strategies for those modifications, requiring a holistic understanding of the architecture of Twitch.

9. At the center of this case is software code developed by NaviStone. This code is written in JavaScript and is placed by NaviStone's clients (including Harriet Carter) on individual pages of their websites. JavaScript is a programming language that has been in use for many years and is ubiquitous on the World Wide Web. I have had the opportunity both to study and experiment with JavaScript and its implementation in connection with my education in computer science, in my professional work specifically at FanDuel and Twitch, and on my own websites, such as bridgewinners.com, a social network for bridge players that I built mostly myself. I also have substantial experience in the computer software and information technologies behind online behavioral advertising which rely on technological underpinnings like NaviStone's service, including two years as a senior scientist at Aggregate Knowledge.

10. I am confident that the analyses that NaviStone requested that I performed in this case lies well within my experience and expertise as a computer scientist.

11. I have only served as a litigation expert twice before. Earlier this year, I was retained by NaviStone to assist in another case involving a nearly identical complaint involving a claim of wiretapping under California law. *Revitch v. New Moosejaw, LLC*, Case No. 18-cv-6827-VC, U.S. District Court, Northern District of California. In 2007, I was asked to represent a group of plaintiffs, professors from Duke University, in connection with a patent dispute over 3D ultrasound technology. The lead expert for the plaintiffs was a professor of biomedical engineering who asked me to join the case to analyze the volumes of source code that run the ultrasound machines, and to identify portions of code that matched specific claims in the professors' patents. This involved my reading and analyzing many millions of lines of source code, from five different companies, over a period of approximately two months. The defendants in the case included General Electric, Panasonic, and Siemens.

MY REVIEW AND INVESTIGATION

12. Where facts are presented, they are based on my own investigation and experience, including communications with NaviStone employees as I determined in my sole discretion were necessary to understand the facts and present the observations and opinions reflected in this report, as well as my review of documents and materials that I deemed necessary for this work, including the NaviStone software installed on Harriet Carter's website. There were no limitations placed on me in connection with who I could talk to or what documents or other materials I could review in connection with my work. The facts presented are the results of my investigation, and I have determined to my satisfaction that they are accurate.

13. In connection with my investigation, I spoke with Larry Kavanagh, NaviStone's CEO, Tom White, the CTO of NaviStone, Chris Ludwig, an Engineering Manager at NaviStone, and Will Clayton, an expert consultant retained by NaviStone, and I was free to ask each of them

any and all questions I had about NaviStone's software, business activities, and any other facts I determined might be relevant to the conclusions, opinions, and observations contained in this report. These are the kinds of individuals I ordinarily consult with and rely upon in providing services for the companies with whom I have worked. There were no limits placed on what I could ask these persons, nor any limits on who I could speak with at NaviStone.

14. The documents I chose to review in this case were those I requested, and my understanding is that all of them have been produced in discovery in this case. I was able to and did request and review those documents I deemed necessary for my work, and in no instance was I denied access to any materials I requested. The documents I relied upon include the JavaScript code as deployed on the Harriet Carter website as described in this report (which is the key to understanding the nature of NaviStone's information collection and communication practices at issue in this case, and which I reviewed and include as an exhibit to this report), the other exhibits to this report, correspondence between NaviStone's counsel and the Federal Trade Commission ("FTC"), and written discovery between the parties in this action, including the transcript of Plaintiff's deposition, and NaviStone's interrogatory responses.

15. After reviewing the above information and conducting my own research and testing, and listening to and carefully reviewing the deposition of Plaintiff's expert, Michael Springer, I reached the following conclusions regarding the JavaScript code and NaviStone's services provided to Harriet Carter, which are consistent with and reflected in my Reports:

16. **The information sent to NaviStone was not collected while it is in transit.** The JavaScript code created by NaviStone and placed by Harriet Carter on the pages of the Harriet Carter website (the "Code") both collected and sent information only *after* the webpage on which it is installed is fully rendered in the visitor's web browser, *i.e.*, once the visitor's communication

requesting the page, and the web server's response to that request, are complete. Information is collected from either from the fully loaded page or by occurrence of two events on that fully loaded page (the clicking of an "add to cart" button and the "tabbing out" of a form field), and that information was sent to NaviStone as distinct, direct, and independent communication from the visitor's web browser.

17. **NaviStone's Code does not capture, read, or redirect communications in transit between Harriet Carter website visitors and the Harriet Carter website they are visiting.** Communications from Harriet Carter's web pages to NaviStone's servers were distinct, original transmissions which were sent to NaviStone's servers independent of any communications the website visitor may have with the Harriet Carter website server or any other party.

18. **NaviStone did not employ any kind of keystroke logging on the Harriet Carter website.** While JavaScript does offer a functionality that would permit every keystroke to be logged and sent to a third-party, the Code did not use such functionality.

19. **NaviStone used a process known as "cookie syncing" to allow the creation of a mailing list while preserving the anonymity of visitors to Harriet Carter's website.** As explained in the Reports, cookie syncing is accomplished by NaviStone sending a unique, client-specific anonymous cookie ID, and nothing more, to its data partner, Neustar. If Neustar has its own cookie on the browser, it is able to sync that cookie to NaviStone's anonymous ID, as I explain in the Reports. The cookie syncing process is separate from the sending of information from Harriet Carter's web pages to NaviStone.

20. To obtain information about anonymous website visits, NaviStone uses a basic analytics engine which uses a collection and transmission technology similar to the one that is

utilized by services such as Google Analytics¹, a commonplace service deployed on tens of millions of websites. These systems rely on JavaScript code to send information to the third party's server concerning the engagement of visitors on website pages where that JavaScript code is installed. As explained in the Reports, these other systems are much more sophisticated, and obtain far more information and data than NaviStone's analytics engine, but, in their basic operations, they function in exactly the same way.

21. Both NaviStone and the most common analytics engine, Google Analytics, use JavaScript to cause the web browsing software to send information to their own servers, which are commonly known as third-party servers to distinguish them from the first-party servers used by their clients to host their websites.

22. The specific kinds of information obtained and sent to NaviStone and Google by their respective JavaScript code are different, but they each involve the gathering and transmission of information via JavaScript commands. For NaviStone, such gathering and transmission of information, by design, occurs only after the page on which the NaviStone software is installed is received and fully rendered in the website visitor's browsing software.

23. As reflected in the Reports, based on my analysis and experimentation with the NaviStone's code, it is my opinion that NaviStone's code does not capture, read, or redirect communications between website visitors and the websites they are visiting. All communications to NaviStone's servers are distinct, original communications collected and sent by the Code to NaviStone's servers in Virginia. Any communication to NaviStone is entirely independent of any other communication which a website visitor has with the website server.

¹<https://google.com/analytics>

24. The independence of NaviStone’s communications from any other communications is apparent for two basic reasons.

25. First, all of the commands run by NaviStone’s JavaScript software occur only *after* initial communications between a website visitor’s browser software and the website it is visiting are completed with the browser software presenting a fully rendered and running webpage in a browser window. Those JavaScript commands obtain information from the loaded and rendered page, not from the electronic communications that delivered the page to the web browser. The JavaScript software collects limited categories of information, compiles that information, and sends that information to NaviStone in batches after the page is loaded. Certain events after the page is fully loaded can trigger unique and independent transmissions to NaviStone, but these are limited to clicking the “add to cart” button and “tabbing out” of certain form fields.

26. Second, I have found no evidence that NaviStone’s JavaScript code attempts to capture or copy any subsequent communications between the web browser and the client’s servers. The only way I am aware of that anything akin to an interception of electronic communications in transit could be accomplished in JavaScript would be by overriding portions of the “XMLHttpRequest” structure. XMLHttpRequest is the abstraction that web browsers provide JavaScript developers to initiate communications to servers on their own². Portions of this abstraction can be modified to allow JavaScript to capture the contents either of requests made to remote servers, or responses thereto. NaviStone, however, does not modify the XMLHttpRequest structure in any way. NaviStone’s Code relies entirely on analysis of data rendered on the page and certain JavaScript events that occur through certain limited user interactions with that page,

²<https://developer.mozilla.org/en-US/docs/Web/API/XMLHttpRequest>

e.g., tabbing out of a form field and clicking the “add to cart” button, but not on intervening in or analyzing in transit any electronic communications between other parties.

27. It is easy to find examples of websites with analytics engines that function in just the same way as NaviStone’s software.

28. For example, on the website for Carlson Lynch³, Plaintiff’s lawyers in this case, I observed data being collected by Google Analytics, a common behavior tracker. When visiting that website we can see that Google is collecting the web page we are viewing, the resolution of our monitors, size of our web browser window, and a variety of other details about our browsing session (*e.g.*, how did we arrive at this page, do we have certain browser enhancements enabled, *etc.*), in addition to information about the pages we are visiting and events occurring on those pages. A full list of all possible tracking parameters for Google Analytics can be found at developers.google.com/analytics/devguides/collection/protocol/v1/parameters.

29. Third-party analytics engines are ubiquitous and customary, and underly much of the ordinary course of operation of the internet as we know it today. Analytics on the web has been around since the mid 1990’s⁴; companies such as WebSideStory, Omniture, Sawmill, and Urchin were all analyzing user behavior through Javascript or image tags as early as 1996. Urchin was acquired by Google in 2005 and was transformed into the product now known as Google Analytics. Behavior analysis for targeted advertising has been around since the mid-1990s as well; DoubleClick (now owned by Google) was founded in 1995 for this exact purpose. Numerous other companies quickly sprung up to compete in that new arena. Behavior analysis for analytics

³<https://www.carlsonlynch.com>

⁴<https://amplitude.com/blog/2015/06/15/the-early-days-of-web-analytics>

and advertising purposes (as well as for general website design improvements and website security) is so commonplace and well known that even casual users of the internet should be aware of it, and certainly anyone working in the IT field should be familiar with this practice.

30. It is not hard to find other examples of analytics on the web.

31. As I detail in my Report, Carlson Lynch makes no less than 72 requests to build its website, including Google Analytics. *See* Ex. B at 6.

32. The website for the U.S. Federal Courts⁵, after making 83 network requests to build its front page, also sends clickstream data to a third-party server via Google Analytics. *See* Ex. A at 16.

33. The website for the Pennsylvania state courts uses 229 requests to build its front page, and collects a wide range of Google Analytics information. *See* Ex. A at 17.

34. The website for the U.S. District Court for the Western District of Pennsylvania logs keystrokes typed into the search box and sends them to third party (search.usa.gov). *See* Ex. A at 18. Each of these requests communicates the personal IP address of the user, information about what kind of computer is being used, the time of day, each keypress made, and whether the user clicks the “search” button or not. *See id.*

⁵<https://www.uscourts.gov/>

I declare under penalties of perjury under the laws of the United States that the foregoing
is true and correct.

A handwritten signature in black ink, appearing to read 'G R K', with a long horizontal stroke extending to the right.

Dated: November 13, 2010

Greg Humphreys

**UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF PENNSYLVANIA**

ASHLEY POPA, individually and on behalf of
all others similarly situated,

Plaintiff,

v.

HARRIET CARTER GIFTS, INC., and
NAVISTONE, INC.,

Defendants.

Case No. 2:19-cv-0450-WSS

EXPERT REPORT OF

Greg Humphreys

EXPERT REPORT OF GREG HUMPHREYS

This report outlines my opinions and observations, and the bases and reasons for them, in the matter of Ashley Popa v. Harriet Carter Gifts, Inc., and NaviStone, Inc., Case No. 2:19-cv-0450-WSS. It is submitted on behalf of Defendant NaviStone, Inc. Because it is anticipated that I will testify both on direct and in rebuttal, the full scope of my testimony may depend in part on the facts and opinions presented by witnesses called by other parties, and, to the full extent permitted, I reserve the right to supplement this report to address such matters.

Summary of Opinions

The internet uses a bevy of complex protocols and conventions to enable reliable communications between digital systems. Technologists have layered additional protocols on top of the internet's foundational ones to create sophisticated applications such as the World Wide Web. Each page of information on the Web can be composed of numerous assets retrieved from myriad servers across the globe. These assets can contain text or images to be viewed, code to describe how that text or imagery should appear, and code to describe how events related to those assets should be handled.

The ability for third parties to be able to anonymously collect statistics about how individuals navigate web sites is both ubiquitous and critical to the Internet as we know it today. Such tracking enables everything from advertising revenue (keeping most of the websites we visit every day available free of charge) to behavior insights that can help website designers optimize their sites to better serve their users' needs.

These behavior tracking systems are not only ubiquitous, they pose little to no privacy risk, as they are managed by third parties and are therefore not privy to the identity of the person(s) they might track.

Nothing about this technology involves any sort of intercepted, forwarded, re-routed, or compromised communications between any two parties, and more generally there is nothing nefarious about anonymized behavior tracking at all. At no point does NaviStone or its clients have the ability to link an individual's name or address with that same individual's browsing behavior.

Most of the Plaintiff's complaint has no basis in fact; a considerable number of claims are made that are factually untrue and asserted with little, no, or even contra-indicating evidence. All of my opinions herein are based on my extensive industry and personal experience with internet development, direct observation of NaviStone's software in action, as well as direct correspondence with the founders and engineers of NaviStone.

Background and Qualifications

Attached as Exhibit A are my professional resume for a complete description of all work experience, and my academic curriculum vitae (from 2007) for a complete description of all academic publications and achievements.

I received a Bachelor of Science and Engineering in Computer Science, *magna cum laude*, from Princeton University in 1997, and a Ph.D. in Computer Science (with distinction in teaching) from Stanford University in 2002. From 2002-2008 I was a professor of Computer Science at the University of Virginia. Since then, I have held several senior technology jobs, including a research position related to online personalized advertising. I have been a senior engineer at NVIDIA and Google, was the Director of Engineering at Fanduel, and am now a senior engineer at Twitch, an Amazon subsidiary. I have also won a North American Bridge Championship and have worked as a professional bridge instructor. I have received numerous awards, including an Academy Award for the lasting, widespread impact that one of my publications has had on the special effects industry.

I have not appeared as an expert witness in or been deposed as part of any cases in the past four years.

Basis and Reason for Opinions

This report provides background about the technical operation of the internet; the World Wide Web; and e-commerce, and will further explain why the communication patterns employed by NaviStone to conduct their business follow standard internet practices and do not constitute any sort of communication interception or any other deceptive practice.

A complete understanding of the operation of the internet is well beyond the scope of this document, and therefore many details have been simplified or elided, but none are germane to the issues regarding NaviStone's business practices.

Internet Communications

For a more complete summary of the information contained in this section, the short paper at <https://web.stanford.edu/class/msande91si/www-spr04/readings/week1/InternetWhitepaper.htm> is a good place to start.

IP Addresses

Each computer connected to the internet has a unique "address", called an "IP address" (IP is an acronym for "Internet Protocol"). These addresses are analogous to home addresses, and are used by the internet's infrastructure in a similar way to how the US Postal Service uses home addresses to deliver mail. Typically an IP address takes the form of four numbers separated by periods, e.g. 151.101.1.67.

It is especially important to understand that an IP address gives no indication what person is using a computer at any time (nothing stops a household member or guest from using any given device). There are two additional key factors that make IP addresses not tied to an individual:

- 1) IP Addresses can change. Particularly for consumer devices that are almost always the originator of communications rather than the destination, there is no need for an IP address to be consistent over time. A user's Internet Service Provider (ISP) can change that user's IP address at any time, either at that user's request or on modem restart. Also, software and hardware solutions called Virtual Private Networks (VPNs) can be used to change one's IP address at will, instantly. VPNs serve as a sort of anonymous proxy that makes all communication from a user appear to be originating from somewhere other than their true IP address.
- 2) Often, all devices inside a home or office will appear to be originating from a single IP address. For example, my personal cable modem has an IP address assigned to it by

Xfinity (my ISP), and all communications originating from inside my house appear, to the outside world, to be coming from that IP address. The modem uses a process called Network Address Translation (NAT) to disambiguate incoming messages to my singular IP and forward them on to the myriad devices inside the home, each of which has a *private* IP address that only has meaning inside my house.

As an analogy, imagine that I live in apartment 4B inside a large building with many residents. When I want to send a letter to 1600 Pennsylvania Avenue, I address it normally but simply write my name and apartment number as the return address. I then hand it to my building's dedicated "mail routing" person, who decides, on the spot, to associate the number 49234 with the pairing "4B" and "1600 Pennsylvania Avenue", and writes that association down in a ledger. He then opens my letter and places it in a new envelope with the same outgoing address but a new return address for the apartment building itself and containing "P.O. Box 49234" (the newly generated unique code). When a response comes back to my letter, he sees the P.O. Box number, looks it up in his ledger, sees that this letter is, unbeknownst to the sender, intended for me in apartment 4B, and forwards its contents on to me. At no point is the recipient of the letter aware that it originated from me, or from apartment 4B; they would only see the address of the apartment complex.

Routing

When a program on computer A wants to send a message to a program on computer B, that message is forwarded through several internet systems called "routers". If computer A is a typical PC at someone's home, the first router will typically be inside their house, e.g. a cable modem. Each router understands whether the message is destined for a system on the local network that they manage, in which case the message is forwarded to the appropriate computer, or to an external system, in which case the message is forwarded to another router that can continue the process until the message arrives at its destination.

Each such message contains additional "meta" information so the destination computer knows what specific program to deliver the message to, in the same way that a person's name on an envelope lets the multiple occupants of a home determine a letter's intended recipient.

Domain Names

Most internet users do not know the IP addresses of any remote computer. For example, if I want to perform a Google search, the contents of my search need to be sent to the IP address of Google's server. This happens to be 172.217.13.68, but that is certainly not common knowledge (and is subject to change at any time!). Therefore, a stable name must exist for computers that are frequent communication destinations, such as "www.google.com".

The mapping from name to IP address is performed by a ubiquitous internet service known as the “Domain Name Service”, or DNS. DNS is a global, decentralized database; no single DNS server contains the entire name-to-address mapping; DNS servers resolve the mapping if they know the answer, or forward the query to another server if they do not.

Example: Browsing the Web

Let’s suppose I want to browse MIT’s website. When I type “web.mit.edu” into my web browser, the first thing that needs to happen is the name web.mit.edu needs to be turned into an IP address.

To do this, a request is sent to a DNS server, and a response is returned telling me that the IP address of MIT’s web server is 104.127.174.242. My web browser then creates a message to 104.127.174.242 containing a coded request to retrieve the contents of the root web page:

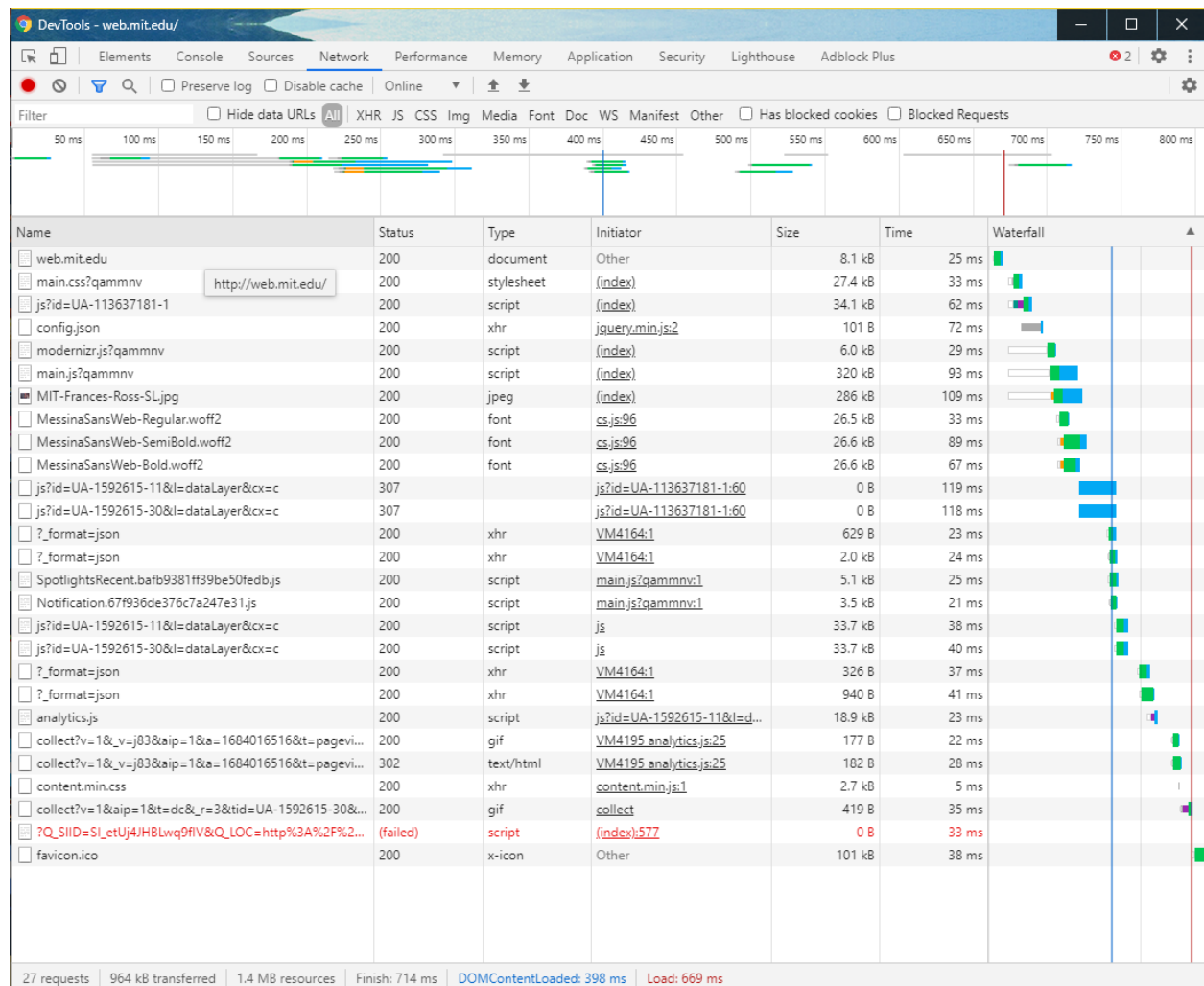
GET / HTTP/1.1

The response to this request contains structured code describing MIT’s home page. This code is written in a language called HTML, which will be explained in the next section. For the purposes of this example, it is important to understand that the HTML code will contain, among other things, references to several other pieces of content on the Web as well, each of which will be loaded in turn before the web page is even displayed. In this case, MIT’s root home page contains references to a CSS file (containing information about how certain elements should appear visually, described in the next section), and several Javascript files (containing information about how the web page should *behave*). References such as these can be, but are not required to be, located on the same internet server that provided the HTML. While MIT’s CSS file is loaded from the same server, along with some custom Javascript hosted by MIT itself, the HTML also references Javascript for Google Analytics (from www.google-analytics.com), Google Tag Manager (from www.googletagmanager.com), as well as Qualtrics (from znbsgdeu4idqsr8db-mit.siteintercept.qualtrics.com).

It is important to understand that for each such reference, the web browser will go through the same process that it used to get the initial web page from MIT. Each reference will be turned into an IP address using DNS, and a request will be sent and routed through the internet to the appropriate destination to build the complete web page before anything is displayed to the user. It is exceedingly rare for a web page to be completely built from assets hosted on only one server.

Using the developer tools built into Google Chrome, it is straightforward to see the complete set of requests made when loading any web page. For our example of browsing MIT, we would see a total of 27 requests being made (to a variety of different web servers) just to build the home

page, as shown below. Each request might return information used to determine visual styling, interactive behavior, font information, or embedded images.



MIT's use of only 27 requests to build its front page is, in fact, quite minimal. On the website for Carlson Lynch (carlsonlynch.com), for example, no less than 72 requests were made to build the web site. This includes requests to: carlsonlynch.com, fonts.googleapis.com, fonts.gstatic.com, cdn.userway.org, googletagmanager.com, google.com, connect.facebook.net, snap.licdn.com, google-analytics.com, px.ads.linkedin.com, googleadservices.com, doubleclick.net, and facebook.com.

Components of a web page

A user's experience when viewing a web page is determined by three factors: content, appearance, and behavior. These factors are controlled, respectively, by HTML, CSS, and Javascript.

As before, some aspects of the construction of web pages are simplified here for the purposes of this document, but not in any way that is germane to the discussion of NaviStone or its business practices.

Content: HTML

The raw content of a web page is described by the HyperText Markup Language, or HTML. Content expressed in HTML carries little to no information about how elements should appear visually, or behave when, for example, a user clicks on something. HTML is simply a way to structure a document without describing how that document should appear or behave.

If, for example, I were orally dictating a letter to be typed, I might say something like “begin a new paragraph” or “make a new section entitled *Components of a web page*”. Neither of those statements describes how much vertical space should appear between paragraphs, or what font size should be used for the section heading; I would simply be describing pure structure. This is the function of HTML.

Appearance: CSS

Cascading Style Sheets, or CSS, has little bearing on the case at hand, so it will not be described here in any detail, except to say that it provides information about the *visual* appearance of certain structured HTML elements. The aforementioned amount of space between paragraphs, or the font size used for section headings, are described in CSS. The most important thing to understand here is that visual appearance (CSS) is described separately from functional behavior (Javascript).

Behavior: Javascript

What makes web pages different from documents in a word processor is that they can be *interactive*. This means that what the user sees can *change* in response to actions that they take, or even in response to non-user actions such as a countdown timer elapsing, a stock price going above some threshold, the temperature in Pittsburgh dropping below freezing, a news story breaking, a tweet from a well known celebrity, etc. Almost any external signal can be captured and routed to a properly programmed web page. The programming language used to convert these events into changes to the web page is called Javascript.

The Javascript Programming Model

Javascript is a full-featured programming language that can be used for a variety of tasks, including very complex, demanding tasks such as building internet servers themselves. We are

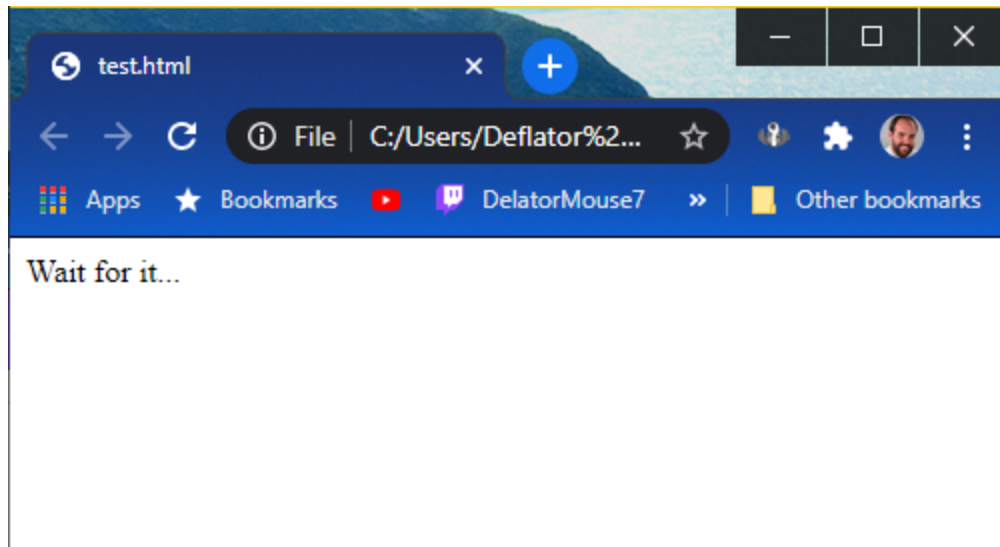
focused here on its typical use in adding interactivity to web pages. When Javascript code is embedded in a web page, its primary purpose is typically to respond to “events”. This can be thought of similarly to a home security system that notifies the homeowner when certain things happen (a door is left open, a window is broken, a camera senses motion, etc). Javascript allows the web developer to say things like “when the user clicks on this image, please execute this code”, or “when the web page is done visually displaying itself, please execute this code”, or “When 5 seconds have elapsed, please execute this code”.

There are many such events defined by the Web programming model, and the code that runs in response to those events can do almost anything, subject to the constraints of the Javascript security model. This security model prevents a web page from, for example, accessing files on the user’s hard drive, turning on a web camera without permission, etc. It is possible for Javascript code to communicate with remote internet servers, modify the contents of a web page, register new code to be run in response to different events, play sounds, save or access data stored inside the web browser itself, etc. This programming model is the engine that drives almost everything we call the World Wide Web today.

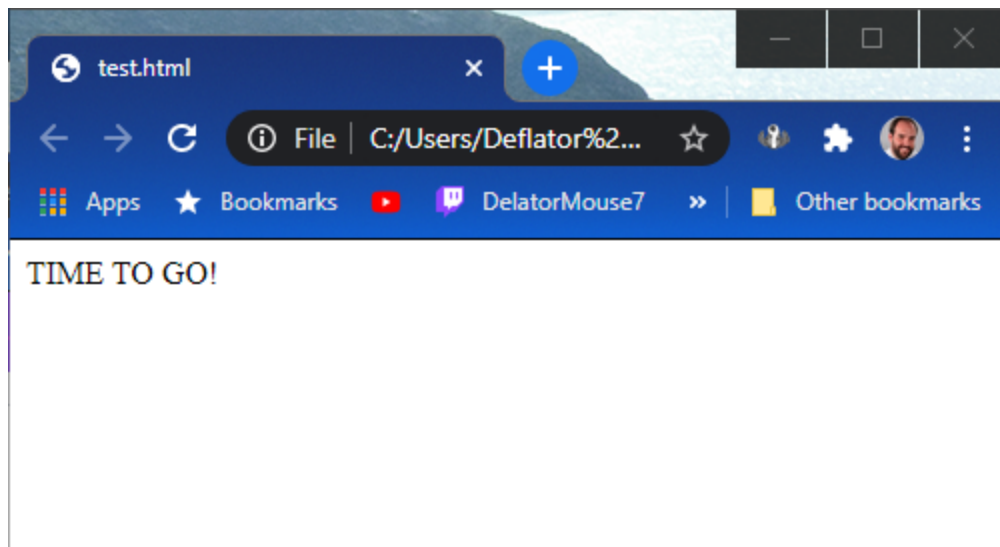
Here is a very simple example of HTML and Javascript in action:

```
<html>
  <head>
    <script>
      setTimeout(() => {
        document.getElementById("counter").innerText = "TIME TO GO!";
      }, 5000);
    </script>
  </head>
  <body>
    <div id="counter">Wait for it...</div>
  </body>
</html>
```

In this example, the body of the document has a single element, named “counter”, that begins its life with the text “Wait for it...”, as shown below:



The Javascript code instructs the browser to set a timer that runs for 5000 milliseconds, and when the timer expires, to run a small piece of code that finds the content block and replaces its text. After 5 seconds, our browser now looks like this:



Almost all web pages follow this pattern. Pieces of Javascript code are associated with various events that might happen, and when those events happen, the Javascript code modifies the web page, communicates with external services, stores or retrieves data in the browser, or whatever the web site developer desires.

No code is “installed” on the user’s computer, and the only local data that Javascript can access is contained entirely within the web browser.

Cookies

One of the biggest challenges in building a modern web site is that the communication protocol used for the web (the HyperText Transport Protocol, or HTTP) is *stateless*: Each request for a new page is completely independent of any previous request. Consider the problem faced by a web server that is asked to serve the “show my banking information” web page. This web server may be handling thousands of simultaneous connections, and because each new request is self-contained, it needs to know which logged-in user has made this very sensitive request.

Cookies are the solution to this problem. A cookie is simply a small, named piece of information that is offered by the web server when a user visits the site and can be stored locally in the user’s web browser. Whenever the browser makes a subsequent request to a server, it includes as part of that request any cookies that were offered by that server. Imagine an anonymous, textual conversation where the parties cannot see nor hear each other, and no other identifying information is available:

Person 1: Hi! My name is Bob.

Person 2: Hi Bob! Hey, if you ever want to talk to me again, please first say the word “kale”.

Person 1: KALE. I’d like to buy a tent from your catalog. Here is my address and credit card.

Person 2: Okay, Bob, I’ll send you a tent.

...Three weeks pass...

Person 1: KALE. Can you give me an update on my tents?

Person 2: Hi Bob, I remember you, your tents should arrive tomorrow.

In this conversation, Person 2 has given Person 1 a “cookie”: the word “kale”. Person 2 makes sure not to give anyone else the same cookie, and by providing this word in every subsequent communication, Person 2 can use it to look up the customer’s order status, billing / shipping information, etc.

On the web, cookies can be separated into *first party* and *third party* cookies. First party cookies are those offered by the site that the user is actually browsing to (e.g., when I go to www.google.com, those cookies offered by the www.google.com server itself). Third party cookies, on the other hand, are set by servers that offer those secondary assets that the original web page references (e.g., a tracking image retrieved from an advertising network’s server).

Usage Example: Building a Behavior Tracker

Recall that a web page is typically built from components loaded from many different servers. The raw HTML comes from the server you initially visit, but that HTML might contain references to scripts, images, fonts, and other resources from other servers as well.

Cookies are offered by and provided to only the servers that requests are made to. This means that in addition to the cookies offered by the initial server request, the web browser may also receive *third party cookies*: cookies offered by secondary requests made to other servers.

Let's imagine I want to offer a service to web developers to help them understand the behavior of users as they navigate the web site. The author of the web site would embed something on each of their pages that originates at my server. A typical example is a very small, transparent image that can be placed anywhere on the page without affecting its appearance.

When a user loads any page on the website, their browser will request my image, and that request will bring with it *my* cookie for that user. Because each web request to my server will contain information about the location that requested it as well as my cookie for that user, I can build a record of this particular user's journey through the website that embedded my tracking image.

While it would of course be possible for the web server itself to build this behavior tracking database from its own cookies, having a third party do it provides substantial privacy benefits to the user. The third party ***does not know the identity of the user it is tracking***. It has no way to correlate its own cookie with the identity of the user.

This type of behavior tracking is precisely the foundation of most popular behavior analysis tools on the web, such as Google Analytics. It is also at the heart of how NaviStone's business model works. Much more complex tracking is certainly possible; sophisticated analysis tools can build visualizations of exactly where users click on a page, how far down they scroll, and almost any behavioral data imaginable.

The most important thing to understand about behavior tracking is that if it is done by a third party, the third party cannot learn the identity of the user being tracked unless that identity is explicitly revealed to that third party.

Cookie Syncing

When two different third parties have tracked information about a user, potentially across multiple websites, it is often advantageous for those third parties to be able to collaborate to make decisions about that user (e.g., what advertisement to show them). Suppose Alice runs a behavior tracking company that stores what products people have clicked on across multiple electronics websites, and Bob owns a different behavior tracking company that stores what products people have clicked on at pet stores. If an advertiser wants to run a campaign focused on tech-savvy pet owners, it would be best if Alice and Bob could somehow share data.

However, since Alice only has access to her own cookies, and likewise Bob, there is no way for them to *directly* examine the data each other has on any given user. This is what **cookie syncing** is typically used for. Rather than explain the technical details behind how the HTTP protocol implements redirection, I will explain cookie syncing by analogy to telephone calls.

I receive a notice in the mail that says *“Alice and Bob would like to provide you with better personalized advertising results. please call 1-800-BOB-SYNC”*. This phone number is staffed by Alice’s company. When I call the number, the operator looks up my unique Alice Identifier -- the opaque, anonymous ID that Alice uses to refer to me. Suppose my Alice Identifier is the number 729. The operator then says, *“Please hang up and call 1-800-ALICE-ID, extension 729”*. This phone number is staffed by Bob’s company, and by giving me my own Alice Identifier as the extension to use when calling, Bob can now look up my Bob Identifier, a completely different number that Bob uses to refer to me (say, 343), and store an association between these two numbers that both Bob and Alice can refer to.

Alice and Bob can then, at their leisure, share their data files with each other, and Alice will know that when Bob says “User 343 loves Golden Retrievers”, she can convert that 343 into her own 729 identifier, and confidently say “Aha, this user loves dogs AND high end stereos, they are a good candidate for my advertising campaign”, and behave accordingly.

For this advertising example, the sharing of data is important, but such sharing is not always required. NaviStone uses Cookie Syncing not to share data, but only so that it can send lists of its own opaque user identifiers to a third party (Neustar) for conversion into physical mailings. Because NaviStone tracks behavior but has no personally identifiable information about the user, they must rely on a third party to actually perform the mailing. Of course, NaviStone and Neustar have different opaque identifiers for users, so NaviStone uses the above cookie syncing approach to allow Neustar to know *“when NaviStone asks us to mail something to user 729, they’re talking about the user we call 343”*.

This process does not, in any way, give NaviStone access to Neustar’s address database, nor would NaviStone have any use for those data.

NaviStone’s Business

NaviStone’s primary goal is to help websites send direct mailings to those customers who would be most likely to respond positively to such mailings. In order to do this, NaviStone employs a behavior tracking approach very similar to the one described above. NaviStone supplies each of its corporate customers with custom Javascript to be embedded on each of its web pages, and operates a collection of servers to receive and process data sent by that Javascript. These servers operate using Amazon Web Services, a popular cloud computing platform, and all servers are confined to Amazon’s “us-east-1” region, meaning that they operate entirely in northern Virginia.

It is first important to understand that the retail website in question has explicitly entered into a business relationship with NaviStone and has willingly and deliberately placed NaviStone's custom Javascript code on its web pages. At no point does NaviStone "inject" code into a user's web browsing experience; all NaviStone code is placed on the retailer's website deliberately.

Also, because NaviStone's code runs directly on its customers' websites, NaviStone can use cookies that are tied to the customer's own web servers, as opposed to its own. This provides significant privacy protections to consumers, because their tracked behavior cannot be correlated across multiple sites that all use NaviStone technology. Furthermore, NaviStone does not access nor store any information that might identify which website user is currently being tracked; NaviStone only has its own, unique, per-site identifier for that user.

Once a business chooses to send direct mailings, NaviStone determines, based on its tracking information for that website alone, which website visitors would likely be good candidates for receiving those mailings. For example, NaviStone might determine *"Visitors 2387, 10984, and 24602 should receive this mailing."* This determination is of little use to the website itself, because it has no idea who those people are. Many of them may have no account on the website, and even if they did, the website has no way to associate the numbers 2387, 10984, and 24602 with its own user database. Furthermore, NaviStone typically excludes individuals who have established accounts with their clients' websites, since the presence of an account suggests that the user would prefer to be contacted electronically rather than by direct mail.

In order to turn these three numbers into physical mailings, NaviStone uses cookie syncing with Neustar; a company that maintains databases of physical addresses for people who have explicitly indicated, somewhere on the web, that they are amenable to receiving promotional materials. So NaviStone sends a message to Neustar saying, for example *"Let's send promotion number 15 to the people I call 2387, 10984, and 24602"*. Because of the cookie sync, Neustar can turn these numbers into its own internal identifiers, and generate a list of addresses to forward to a printing and mailing agency. The printing agency knows what brochure or card to print for "promotion number 15".

At no point during this process is the user's address or other identifiable information communicated to NaviStone. NaviStone merely maintains a database of behavior, and makes decisions about which users to communicate with based on that behavior. ***NaviStone does not know who those people are, their names, addresses, phone numbers, credit or banking numbers, or any other personal information about them.***

Furthermore, no party, including Navistone, Harriet Carter, Neustar, the printing company, or any other person or entity, can correlate any personal information to any tracked behavior.

In fact, NaviStone uses the presence of *potentially* personally identifiable information as an *anti-signal*, suggesting that the person in question would prefer to be contacted electronically rather than by direct mail. NaviStone tends to exclude individuals who either sign in to the website or provide an email address from any mailings, unless their tracked behavior makes them an especially excellent candidate for the client's direct mail campaign.

Determining the presence of an email address is done not by collecting that information, but rather by identifying the presence of text that resembles an email address in a form. This resemblance is detected entirely in Javascript, and no email addresses are collected nor transmitted to NaviStone. ***Only a simple yes/no signal indicating an email address's presence is communicated, not the email address itself.***

Wiretapping

NaviStone does not intercept, modify, re-route, forward, nor receive copies of **any** communications sent from a consumer's web browser to the retailer they are visiting. All communications to NaviStone originate from the consumer's web browser, and these are all unique, novel communications that are intended for, and sent to, no entity but NaviStone.

Ubiquity of Behavior Tracking

It is extremely easy to find examples of behavior trackers very similar to NaviStone's. For example, on the website for Carlson Lynch, we see data being collected by Google Analytics; a common behavior tracker, as shown below. Here we can see that Google is collecting what web page we were viewing, the resolution of our monitors, size of our web browser window, and a variety of other details about our browsing session (e.g., how did we arrive at this page, do we have certain browser enhancements enabled, etc). A full list of all possible tracking parameters for Google Analytics can be found at <https://developers.google.com/analytics/devguides/collection/protocol/v1/parameters>.

DevTools - carlsonlynch.com/

Elements Console Sources Network Performance Memory Application Security Lighthouse

Filter ☐ Hide data URLs ☒ All XHR JS CSS Img Media Font Doc WS Manifest Other ☐ Has blocked cookies ☐ Blocked Requests

2000 ms 4000 ms 6000 ms 8000 ms 10000 ms 12000 ms 14000 ms 16000 ms 18000 ms 20000 ms 22000 ms

Name Headers Preview Response Initiator Timing

U0z8T8Awards-uai-b2UX348.jp
super-lawyers-logo-uai-517x2
wp-emoji-release.min.js?ver=...
1Ptug8YS_SKggPNyCOITw.wc
neIQzD-0qpwxpaWvjeD0X88S
neIXzD-0qpwxpaWvjeD0X88S
uncode-icons.woff2
data:image/gif;base...
university-denying-tuition-rei...
group-students-studying-e15
kelly-iverson-waist-up.jpg
widget.js
style.css?ver=5.2.7
scripts.js?ver=5.1.9
js?id=UA-117459285-1
wpcf7-redirect-script.js
api.js?render=6LdKlasZAAAA
wp-mediaelement.min.js?ver=...
plugins.js?ver=964280083
app.js?ver=964280083
wp-embed.min.js?ver=5.2.7
PittsburghTest1-e1565719751
stripe4.jpg
Katrina-e1565719650440.jpg
widget_app_base_159578989...
fbevents.js
insight.min.js
recaptcha_en.js
analytics.js
js?id=AW-794305293&l=data
XvHipec8kb
collect?v=2&fmt=js&pid=233
2064351697116300?v=2.9.22.
collect?v=1&_v=j83&a=68987...
collect?v=2&fmt=js&pid=233
conversion_async.js
anchor?ar=1&k=6LdKlasZAA...
?random=1595866488097&c...
?id=2064351697116300&ev=...
?random=1595866488097&c...
styles_ltr.css
recaptcha_en.js
Tt0mLDKZif_cow3Xat8Z87ITm
logo_48.png
KFOICnqEu92Fr1MmEU9fBBc...
webworker.js?hl=en&v=r8W...
recaptcha_en.js
pixel?d=KAE
ChicagoTest1-e159198352095
favicon.png
tr/
reload?k=6LdKlasZAAAAAKk...
SanDiego_v2-e159198345920
AdobeStock_120504937-e159...

General

Request URL: https://www.google-analytics.com/collect?v=1&_v=j83&a=689872996&t=pageview&s=1&d1=https%3A%2F%2Fcarlsonlynch.com%2F&ul=en-us&de=UTF-8&dt=Carlson%20Lynch%20-%20Consumer%20Rights%20Attorneys%20-%20Pittsburgh%2C%20Chicago%2C%20Los%20Angeles%20%26%20San%20Diego&sd=24-bit&sr=2560x1440&vp=1314x1281&je=0&_u=AACAAUAB-&jid=&gjid=&cid=836101561.1595866475&tid=UA-117459285-1&_gid=1127319066.1595866475>m=2ou7f0&z=775465540

Request Method: GET

Status Code: 200

Remote Address: 172.217.7.206:443

Referrer Policy: no-referrer-when-downgrade

Response Headers

access-control-allow-origin: *

age: 290935

alt-svc: h3-29=":443"; ma=2592000, h3-27=":443"; ma=2592000, h3-T050=":443"; ma=2592000, h3-Q050=":443"; ma=2592000, h3-Q046=":443"; ma=2592000, h3-Q043=":443"; ma=2592000, quic=":443"; ma=2592000; v="46,43"

cache-control: no-cache, no-store, must-revalidate

content-length: 35

content-type: image/gif

date: Fri, 24 Jul 2020 07:25:55 GMT

expires: Mon, 01 Jan 1990 00:00:00 GMT

last-modified: Sun, 17 May 1998 03:00:00 GMT

pragma: no-cache

server: Go!fe2

status: 200

x-content-type-options: nosniff

Request Headers (12)

Query String Parameters view source view URL encoded

v: 1

_v: j83

a: 689872996

t: pageview

_s: 1

dl: https://carlsonlynch.com/

ul: en-us

de: UTF-8

dt: Carlson Lynch - Consumer Rights Attorneys - Pittsburgh, Chicago, Los Angeles & San Diego

sd: 24-bit

sr: 2560x1440

vp: 1314x1281

je: 0

_u: AACAAUAB~

jid:

gjid:

cid: 836101561.1595866475

tid: UA-117459285-1

_gid: 1127319066.1595866475

gtm: 2ou7f0

z: 775465540

72 requests 38.1 kB transferred

It isn't hard to find uses of behavior tracking on the web. The website for the US Federal Courts, after making 83 network requests to build its front page, also builds this request to Google Analytics:

The screenshot shows the Chrome DevTools Network tab with the 'Headers' panel expanded. The request is a GET request to a Google Analytics tracking URL. The 'Response Headers' panel shows various headers including 'access-control-allow-origin', 'alt-svc', 'cache-control', 'content-length', 'content-type', 'date', 'expires', 'last-modified', 'pragma', 'server', 'status', and 'x-content-type-options'. The 'Request Headers' panel shows the 'Query String Parameters' for the request.

Request URL: https://www.google-analytics.com/r/collect?v=1&_v=j83&a=1631423761&t=pageview&_s=1&d1=https%3A%2F%2Fwww.uscourts.gov%2F&u1=en-us&de=UTF-8&dt=United%20States%20Courts%20%7C&sd=24-bit&sr=2560x1440&vp=1314x1264&je=0&_u=IEBAAEAB~&jid=1897498519&gjid=1471106702&cid=1045963840.1595867012&tid=UA-16355926-8&_gid=1471718490.1595867012&r=1&z=1721327521

Request Method: GET

Status Code: 200

Remote Address: 172.217.13.238:443

Referrer Policy: no-referrer-when-downgrade

Response Headers:

- access-control-allow-origin: *
- alt-svc: h3-29=":443"; ma=2592000, h3-27=":443"; ma=2592000, h3-T050=":443"; ma=2592000, h3-Q050=":443"; ma=2592000, h3-Q046=":443"; ma=2592000, h3-Q043=":443"; ma=2592000, quic=":443"; ma=2592000; v="46,43"
- cache-control: no-cache, no-store, must-revalidate
- content-length: 35
- content-type: image/gif
- date: Mon, 27 Jul 2020 16:23:34 GMT
- expires: Fri, 01 Jan 1990 00:00:00 GMT
- last-modified: Sun, 17 May 1998 03:00:00 GMT
- pragma: no-cache
- server: G01fe2
- status: 200
- x-content-type-options: nosniff

Request Headers (12)

Query String Parameters

- v: 1
- _v: j83
- a: 1631423761
- t: pageview
- _s: 1
- d1: https://www.uscourts.gov/
- u1: en-us
- de: UTF-8
- dt: United States Courts |
- sd: 24-bit
- sr: 2560x1440
- vp: 1314x1264
- je: 0
- _u: IEBAAEAB~
- jid: 1897498519
- gjid: 1471106702
- cid: 1045963840.1595867012
- tid: UA-16355926-8
- _gid: 1471718490.1595867012
- _r: 1
- z: 1721327521

84 requests | 2.3 MB transferred

The Pennsylvania State Courts web site uses a whopping 229 requests to build its front page, and collects the following Google Analytics data:

The screenshot shows the Chrome DevTools Network tab for the website `www.pacourts.us/`. The left pane displays a list of 229 requests, including various image files (e.g., `background.png`, `gradient-box.png`, `alert-header.png`, `arrow-white-down.png`, `moment-timeline-tweet.1ef2`, `timeline.94cca7163e563bc44e`, `faviconico`, `profile?callback=__twitter.callba`, `syndication?dnt=1&l=%7B%2`, `TZ83GjTy_normal.jpg`, `timeline.32f7f89e2e680ebfe3f`, `data:image/svg+xml;...`, `data:image/svg+xml;...`, `data:image/svg+xml;...`, `data:image/svg+xml;...`, `jot?dnt=1&l=%7B%22widget`, `?id=354892865388514&ev=N`, `background-tile.png`, `carousel-arrow-left.png`, `carousel-arrow-right.png`, `alert.png`, `arrow-white-down.png`, `welcome.png`, `arrow-right-gray.png`, `high-profile-cases.png`, `public-records.png`, `pay-fine.png`, `forms.png`, `e-filing.png`, `contact.png`, `arrow-right-gray.png`, `PAeDocket_36.png`, `PAePay_36.png`, `PACFile_36.png`, `icons_facebook.png`, `twitter_36.png`, `youtube_36.png`, `alert-tab-over.png`, `alert-tab.png`, and `high-profile-cases-over.png`). The right pane shows the details for the first request, which is a Google Analytics request.

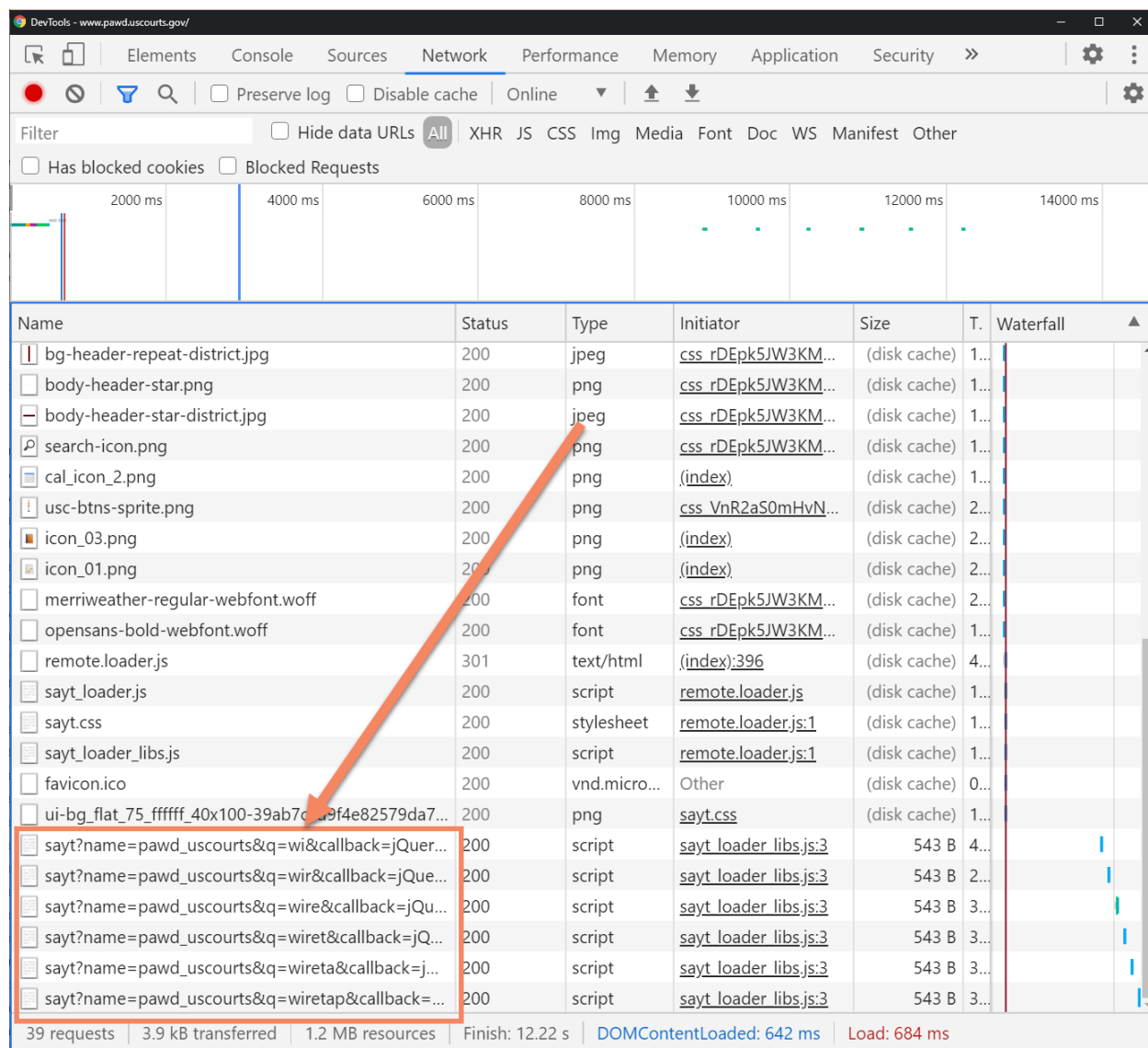
Request Details:

- Name:** `JTURjlg1_j6t8kCHKm45_dJE3g`
- Request URL:** `http://www.google-analytics.com/__utm.gif?utmwv=5.7.2&utms=2&utmn=269414761&utmhn=www.pacourts.us&utms=UTF-8&utmsr=2560x1440&utmv=1314x1281&utmsc=24-bit&utmul=en-us&utmje=0&utmf1=-&utmdt=Unified%20Judicial%20System%20of%20Pennsylvania&utmhid=239621892&utmr=-&utmp=%2F&utmht=1595867218407&utmcc=__utma%3D11298741.1057018081.1595867213.1595867213.1595867213.1%3B%2B__utmz%3D11298741.1595867213.1.1.utmcsr=(direct)%7Cutmccn%3D(direct)%7Cutmcmd%3D(none)%3B&utmjid=&utmu=qAAAAAAAAAAAAAAAAAAAAAE~`
- Request Method:** GET
- Status Code:** 307 Internal Redirect
- Referrer Policy:** no-referrer-when-downgrade
- Response Headers:**
 - Location:** `https://www.google-analytics.com/__utm.gif?utmwv=5.7.2&utms=2&utmn=269414761&utmhn=www.pacourts.us&utms=UTF-8&utmsr=2560x1440&utmv=1314x1281&utmsc=24-bit&utmul=en-us&utmje=0&utmf1=-&utmdt=Unified%20Judicial%20System%20of%20Pennsylvania&utmhid=239621892&utmr=-&utmp=%2F&utmht=1595867218407&utmcc=__utma%3D11298741.1057018081.1595867213.1595867213.1595867213.1%3B%2B__utmz%3D11298741.1595867213.1.1.utmcsr=(direct)%7Cutmccn%3D(direct)%7Cutmcmd%3D(none)%3B&utmjid=&utmu=qAAAAAAAAAAAAAAAAAAAAAE~`
 - Non-Authoritative-Reason:** HSTS
- Request Headers (2):**
 - Query String Parameters:**
 - `utmwv: 5.7.2`
 - `utms: 2`
 - `utmn: 269414761`
 - `utmhn: www.pacourts.us`
 - `utmsc: UTF-8`
 - `utmsr: 2560x1440`
 - `utmv: 1314x1281`
 - `utmsc: 24-bit`
 - `utmul: en-us`
 - `utmje: 0`
 - `utmf1: -`
 - `utmdt: Unified Judicial System of Pennsylvania`
 - `utmhid: 239621892`
 - `utmr: -`
 - `utmp: /`
 - `utmht: 1595867218407`
 - `utmcc: UA-168399-25`
 - `utmc: __utma=11298741.1057018081.1595867213.1595867213.1.1.utmcsr=(direct)|utmccn=(direct)|utmcmd=(none);`
 - `utmjid:`
 - `utmu: qAAAAAAAAAAAAAAAAAAAAAE~`

229 requests | 73.0 kB transferred

The Federal District Court for the Western District of Pennsylvania surprisingly does not seem to contain any behavior tracker. However, when a user types into its search bar, keystrokes are logged. In the image below, the network requests outlined in orange were made *instantly* as I typed the word “wiretap” into the court’s search box¹. These keystrokes are not sent to the court itself, but instead to a third party (search.usa.gov). Each such request communicates my personal IP address, information about what kind of computer I use, the time of day, and each keypress I make, whether I click the “search” button or not. A video of this behavior is here: <https://drive.google.com/file/d/1hutniZhseCIEw11zEZrPrmhFAMOr5lbO/view?usp=sharing>

While NaviStone absolutely does NOT employ this kind of keystroke logging as the Plaintiff alleges, it is interesting to note that the Court for the Western District of Pennsylvania does.



Name	Status	Type	Initiator	Size	T.	Waterfall
bg-header-repeat-district.jpg	200	jpeg	css_rDEpk5JW3KM...	(disk cache)	1...	
body-header-star.png	200	png	css_rDEpk5JW3KM...	(disk cache)	1...	
body-header-star-district.jpg	200	jpeg	css_rDEpk5JW3KM...	(disk cache)	1...	
search-icon.png	200	png	css_rDEpk5JW3KM...	(disk cache)	1...	
cal_icon_2.png	200	png	(index)	(disk cache)	1...	
usc-btns-sprite.png	200	png	css_VnR2aS0mHvN...	(disk cache)	2...	
icon_03.png	200	png	(index)	(disk cache)	2...	
icon_01.png	200	png	(index)	(disk cache)	2...	
merriweather-regular-webfont.woff	200	font	css_rDEpk5JW3KM...	(disk cache)	2...	
opensans-bold-webfont.woff	200	font	css_rDEpk5JW3KM...	(disk cache)	1...	
remote.loader.js	301	text/html	(index):396	(disk cache)	4...	
sayt_loader.js	200	script	remote.loader.js	(disk cache)	1...	
sayt.css	200	stylesheet	remote.loader.js:1	(disk cache)	1...	
sayt_loader_libs.js	200	script	remote.loader.js:1	(disk cache)	1...	
favicon.ico	200	vnd.micro...	Other	(disk cache)	0...	
ui-bg_flat_75_ffffff_40x100-39ab7c...	200	png	sayt.css	(disk cache)	1...	
sayt?name=pawd_uscourts&q=w&callback=jQuer...	200	script	sayt_loader_libs.js:3	543 B	4...	
sayt?name=pawd_uscourts&q=wir&callback=jQue...	200	script	sayt_loader_libs.js:3	543 B	2...	
sayt?name=pawd_uscourts&q=wire&callback=jQu...	200	script	sayt_loader_libs.js:3	543 B	3...	
sayt?name=pawd_uscourts&q=wiret&callback=jQ...	200	script	sayt_loader_libs.js:3	543 B	3...	
sayt?name=pawd_uscourts&q=wireta&callback=j...	200	script	sayt_loader_libs.js:3	543 B	3...	
sayt?name=pawd_uscourts&q=wiretap&callback=...	200	script	sayt_loader_libs.js:3	543 B	3...	

39 requests | 3.9 kB transferred | 1.2 MB resources | Finish: 12.22 s | DOMContentLoaded: 642 ms | Load: 684 ms

¹ Although the word “wiretap” is seven letters, only six requests are sent because the initial “w” does not trigger a search. This is standard practice to avoid sending unnecessary traffic when too little data has been presented to be useful for disambiguating the search results.

Experimenting With NaviStone Code

To more fully understand the way NaviStone's code functions, I created a storefront at www.partsrus.com and installed NaviStone's software on it. Anyone is welcome to visit this site and see the code in action.

I was instructed to place a single line of HTML on each page on my site:

```
<script src="//code.murdoog.com/onetag/C1F371803F1213.js" async defer></script>
```

This causes the file "C1F371803F1213.js" to be loaded from one of NaviStone's servers, and the code inside to be run. This code is neither secret nor encrypted. Anyone who wishes to can download <https://code.murdoog.com/onetag/C1F371803F1213.js> and inspect this code for themselves (note that it is easier to read the code after it is run through a Javascript "beautifier" such as beautifier.io, as Javascript code of this nature is often stripped of extraneous spacing to conserve bandwidth).

This code determines what kind of web page the viewer is looking at, and makes a network request back to NaviStone's servers with this information. This request, shown below, looks very similar to the one captured in Plaintiff's complaint, paragraph 15. The data being transmitted (highlighted in the image below in orange) is encoded, as noted by Plaintiff, using Base64 encoding. This is an industry standard encoding used to ensure that any special characters that might be present in the data being sent will not be accidentally misinterpreted by the remote server.

The screenshot shows the DevTools Network tab for a request to `https://apis.murdoog.com/mgx_2/C/RawData/F371803F1213?v=d3252782-5abd-4d4b-95ed-27ffdb47a6d3`. The request is a GET method with a status code of 200 OK. The response headers show a connection of keep-alive and a content length of 208. The request headers include `Accept: */*`, `Accept-Encoding: gzip, deflate, br`, `Accept-Language: en-US,en;q=0.9`, `Connection: keep-alive`, `Host: apis.murdoog.com`, `Referer: https://www.partsrus.shop/product-page/bee`, `Sec-Fetch-Dest: script`, `Sec-Fetch-Mode: no-cors`, `Sec-Fetch-Site: cross-site`, and `User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_5) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/84.0.4147.105 Safari/537.36`. The query string parameters include `v: d3252782-5abd-4d4b-95ed-27ffdb47a6d3`, `m: d76d2390-c041-4919-88b6-e48b51303639`, `se: 53c091a8-20de-41ae-a6a0-a196af26b3a7`, and a `callback` field containing a long Base64-encoded string. A red arrow points to the `callback` field.

If we decode this field using the freely available tools at <https://www.base64decode.org/> (as done by Plaintiff in complaint paragraph 16), we can see (as is also visible in Plaintiff's complaint) that the data being sent contains no personal information:

```
{
  "v": "d3252782-5abd-4d4b-95ed-27ffdb47a6d3",
  "m": "d76d2390-c041-4919-88b6-e48b51303639",
  "e": "1",
  "csi": "",
  "se": "53c091a8-20de-41ae-a6a0-a196af26b3a7",
  "n": 1,
  "p": "18206a14-54d9-4183-9274-2a8e8b84a943",
  "u": "https://www.partsrus.shop/product-page/bee",
  "pn": "/product-page/bee",
  "r": "",
  "t": "Home | Parts я Us",
  "c": "https://www.partsrus.shop/",
  "pr": "3F1213",
  "s": 1,
  "vs": 1,
  "l": "PageLoad"
}
```

Nothing in this transmitted data contains any information about my identity, nor can any of the fields in this data be correlated to my identity. NaviStone has no way of knowing from any of this who I am, where I live, or anything personally identifiable about me. What it does know is that I visited a product page on this website about a bee.

If I were to continue to browse this site, NaviStone would be able to build a profile of me as a shopper, know what I placed in my cart, and how much money, if any, I spent on this site. But it would still not know *who* was doing the shopping, just that it was the person who started out on the bee page.

Form Field Collection

In NaviStone's early days, some speculative work was done to automatically collect the content of a subset of web form fields. This effort was operational until June 2017.

Because this collection was speculative, only the collection software was ever developed; the contents of the form fields were merely logged into an unstructured "data dump", which was unsearchable and served merely to verify the proper operation of the Javascript collection code. These data dumps were never used, in any way, to support NaviStone's business. Some brief experiments performed in 2016 by Larry Kavanaugh revealed that the data would not be useful, and the project was abandoned, although the data collector was allowed to continue running for a few months more.

However, it is important to note that even when NaviStone was collecting form field data, no keystrokes were captured or intercepted, and no communications were intercepted, forwarded,

or re-routed. NaviStone employed the Javascript event-based programming model to write code that would be triggered when a form field appeared completed (e.g., when a user moves their cursor to another field; Javascript calls this a “blur” event) to send a new, unique communication directly from the browser to NaviStone’s servers. This communication was not ever intended for another party.

This method of collecting and transmitting form-field data in advance of final form submission is quite standard across the internet. If you have ever tried to sign up for a web site only to be told that your preferred username is already taken, this is precisely how it happens.

Auto-completing web forms that appear to magically know what you’re going to type before you type it are using an even more aggressive collection approach where every single keystroke is sent to a server to quickly suggest completions based on what you type.

All form data collection was speculative in support of a hypothetical future product that never materialized.

Plaintiff’s Complaint

In this section I will provide specific responses to claims made in this case. Each subsection will refer to the individually numbered paragraphs in the complaint document. If a paragraph is not explicitly discussed here, that omission should not be construed to mean that I agree with that paragraph.

Paragraph 1

Plaintiff claims that NaviStone “intercepted Harriet Carter website visitor’s keystrokes, mouse clicks, and other electronic communications in real time for the purpose of gathering visitors’ Personally Identifiable Information (PII)”. This is doubly incorrect. Nothing about NaviStone’s system ever operated at the granularity of keystrokes or mouse clicks. “Other electronic communications” is too vague to interpret. Furthermore, NaviStone is not in the business of gathering PII. NaviStone has no databases containing PII, and its business model does not involve maintaining, analyzing, transmitting, or in any way knowing, the PII of any users.

Paragraph 7

All information sent from a user’s web browser goes to NaviStone’s servers, which are fully housed in the Amazon Web Services region known as “us-east-1”. This means that NaviStone’s software runs entirely on computers located in northern Virginia.

Paragraph 9

As described above, web pages are *routinely* built from the responses of many requests made to many different servers. If having a small piece of code on a web page that loads scripts from another server to fully flesh out the web page constitutes a “back door”, then essentially every single web page on the internet contains such back doors. Labeling this as a “back door” suggests something nefarious, when in fact this is standard practice for building any web site.

This practice is in place in the web sites of Plaintiff’s counsel, the Pennsylvania State Courts, the Federal District Court for the Western District of Pennsylvania, the US Federal Courts, and the US Supreme Court, just to name a few.

Paragraph 10

Plaintiff claims that NaviStone’s computer code “acted as a secret wiretap that sends visitor’s IP addresses and other PII to NaviStone”. First, every request made on the internet reveals the IP address of the requestor. IP addresses are not linked to people, and they are not secret information. Although it is possible to mask one’s IP address through the use of specialized hardware or software, this is rare, and at the discretion of the website’s user.

Plaintiff also claims the code was “instantly reporting every keystroke and mouse click to the NaviStone server”. This is factually incorrect. Even during the time when NaviStone was collecting form field data, which were never used for any product including its direct mailing campaigns, no keystrokes or mouse clicks were ever reported. This is a fundamental misunderstanding of how the technology functions.

Paragraph 11

Plaintiff claims that “real time interception of data starts as soon as the visitor loads www.harrietcarter.com into their web browser”. This is not true. Not only is any data collection not performed in “real time” as plaintiff suggests, but NaviStone’s code is loaded after all other assets necessary to view and interact with the website.

Paragraph 12

Plaintiff claims that “NaviStone maintains a back-end database containing data and profiles on consumers across the United States, which include consumers’ names and mailing addresses.”. This is factually incorrect. NaviStone has no such database. At no time does NaviStone have knowledge of or access to any users’ names or mailing addresses. This is again a fundamental misunderstanding of technology.

Paragraph 13

Plaintiff claims that NaviStone's so-called "wiretap codes" are "concealed from... website users". Not only is this not true, it is not even technically possible. In order for any code to be executed by a browser, or for any communication to happen between a browser and a server, it must be visible and inspectable by any visitor to a website. There is no technical way to conceal running Javascript code, nor any communication between the browser and the server, from website users. It can be seen either in any modern browser's developer tools (as shown in Plaintiff's own complaint, demonstrating that the code is, by definition, not concealed!), or by the use of any web debugging proxy.

Paragraph 15

Plaintiff claims that NaviStone employs an "incomprehensible looking code, known as Base64 encoding". Base64 encoding is a widespread industry encoding standard, and is instantly recognizable to anyone familiar with web development. Its purpose is not to obscure meaning, but rather to avoid difficult encoding problems when trying to transmit data that might contain special characters that could potentially be misinterpreted by the receiving side. It is the equivalent of having a specialized typeface for quotations, to prevent the reader from misunderstanding the nature of what they are reading.

Paragraph 16

Plaintiff demonstrates themselves that Base64 can be decoded easily using freely available tools. Again, this is common knowledge to anyone familiar with modern internet development.

Furthermore, in Plaintiff's own image, in which they say you can "see the information being collected by NaviStone", absolutely no PII is contained. There are no email addresses, no physical addresses, no names, nothing that could be construed as PII.

Paragraph 17

As stated above, when any web site is loaded, files from other remote servers will be loaded. This is standard practice, and can be found on any website, including those of Plaintiff's counsel and all court system web pages.

Paragraph 18

Plaintiff claims that the retrieved file "contains encrypted computer code". This is factually incorrect. Not only does the retrieved file not contain anything encrypted, but the code can even

be easily inspected using the same developer tools that Plaintiff has taken screenshots of. It is not secret.

Paragraph 19

Plaintiff *correctly* claims that NaviStone's code tracks that the user has navigated to a cart page. This is how any behavior tracker works, including industry standard analytics packages such as Google Analytics. As shown above in this report, such information is also gathered by Plaintiff's counsel's web site, as well as the web sites of the court systems. There is nothing nefarious going on here; behavior tracking is ubiquitous across the web, and a critical resource used by web site developers to *anonymously* understand the behavior of their users and improve or refine their experience.

Paragraph 20

Plaintiff claims that "keystrokes are automatically intercepted". This is factually incorrect. No keystrokes are collected.

Paragraph 23

Plaintiff claims that email addresses are "secretly intercepted and sent to NaviStone's back-end database". Not only is nothing secret going on (all transmissions are easily visible, and all code is readable), but NaviStone has no such back-end database. This is factually incorrect.

Paragraph 24

Plaintiff claims that NaviStone has "link[ed] [the user's] IP address with their name, mailing address and email address, which is now all stored in NaviStone's back-end database". This is factually incorrect. NaviStone does not now, nor has it ever, maintained any such database.

Paragraph 27

Plaintiff claims that "if a user enters their information into the Harriet Carter site and then visits another website running the NaviStone code, that user is already de-anonymized for the second site based solely on their IP address." This is factually incorrect. As stated above, NaviStone maintains no such database. NaviStone only uses behavior on each site to make determinations about which users might be receptive to direct mail.

Paragraph 28

Plaintiff is correct that one of the cookies offered by NaviStone's servers is a universal visitor ID that will be the same across all NaviStone sites. This cross-site ID was created at a time when

NaviStone imagined offering a hypothetical future service that would permit companies to agree to use cross-site behavioral data to improve analysis. No such product was ever offered, and NaviStone's contracts with clients expressly forbid the use of any cross-site analysis. Even in cases when a single client uses NaviStone across multiple separate websites, no cross-site analysis is performed.

The universal visitor ID noted by Plaintiff in this paragraph is still set by NaviStone, but is not used in any way. This is an example of *technical debt*: work was done to create this ID, but it remains only as a vestigial reminder of a hypothetical product long since abandoned.

Paragraph 29

Although this has been covered before, Plaintiff's claim that NaviStone's code "functions as a real-time wiretap of users' IP addresses, keystrokes, and PII" is factually false. Not only are no communications intercepted or forwarded, making this not a wiretap of any kind, keystrokes are not being transmitted, and any form field data collected was never used to link users with any PII.

Paragraph 30

Plaintiff claims that "Harriett [*sic*] Carter was aware of NaviStone's business model in capturing information from websites across many different industries.". While this might be true, since NaviStone does not use any information from any website other than each individual client, it is certainly not relevant to any claim.

Paragraph 36

Plaintiff claims that "every keystroke, mouse click, and other electronic communications of Plaintiff were intercepted in real-time by NaviStone." This is factually untrue.

Paragraph 38

Plaintiff claims that NaviStone "had already collected some or all of her personal information from other websites in its wiretap network." This is factually untrue; no correlation between NaviStone client sites is ever made under any circumstances.

Paragraph 39

Plaintiff claims that "NaviStone was able to link Plaintiff's previous browsing activity on other websites and her intercepted activity on Harriet Carter's website, to her PII, revealing an enormous amount of private information about Plaintiff." This is factually untrue. NaviStone

does not make these links. Furthermore, NaviStone at no time used any PII from any user for any product or service.

Paragraph 55

Plaintiff has not demonstrated or argued what communication was intercepted. In fact, there is no such communication. All communications from the user's web browser to NaviStone's servers are unique and separate from any other communications made to any other party. No communication between the user and Harriet Carter were intercepted, forwarded, or transformed.

Paragraph 57

Again, absolutely no communications between a website visitor and Harriet Carter were intercepted. All communication between the visitor's web browser and NaviStone were separate and distinct from all communications to Harriet Carter.

Paragraph 59

Plaintiff claims that "Harriet Carter knew that NaviStone would add its visitor's information, procured through the wiretap, to its back-end database and disclose that information to other users of NaviStone code as part of its effort to de-anonymize visitors." Because NaviStone does not do this, it is not possible that Harriet Carter knew it.

Paragraph 60

Plaintiff claims that "Harriet Carter intentionally used information of its visitors, obtained through NaviStone's wiretap on other websites, to de-anonymize users of Harriet Carter's site." This is factually incorrect. The identity of visitors to Harriet Carter's website is *never* known to NaviStone, much less to Harriet Carter itself.

Paragraphs 61 and 64

These entire paragraphs are factually incorrect for reasons enumerated many times above.

Paragraph 65

Plaintiff claims that "[NaviStone's] code is secret and encrypted." NaviStone's code is neither secret nor encrypted. Javascript code, by its nature, *cannot* be secret nor encrypted. Encrypted code cannot be executed by a web browser, and all Javascript code, because it is transmitted and run by a web browser, can easily be inspected by anyone using either a web proxy or the same developer tools that Plaintiff employed in their complaint.

Paragraph 73

On the contrary, Defendant's conduct is standard practice for any modern web site; the use of tracked visitor behavior to understand user preferences and site experience is ubiquitous across the web. This report demonstrates that similar tracking capabilities are employed by any website that uses Google Analytics, including Plaintiff counsel and several court websites that were examined. And while NaviStone's code does not log keystrokes, many sites employ code that does, including (as shown above), the website for the US District Court of the Western District of Pennsylvania.

Compensation for Study and Testimony

My compensation is \$350 per hour for study and consultation time, and \$400 per hour for deposition/deposition preparation time. Time spent travelling, if not working on the case, is paid for at half of my consulting rate. In addition to my professional fees, I am reimbursed for out-of-pocket expenses related to this engagement, including travel, lodging, telephone, express delivery, and other miscellaneous expenses. To date, I have earned fees, including billed and unbilled time, in the amount of \$16,362.50, expenses, billed and unbilled, in the amount of \$111.90.



Greg Humphreys

Greg Humphreys

560 Rolling Valley Ct, Charlottesville, VA 22902

Tel: 434-260-0543

humper@gmail.com

PROFILE

I am a computer scientist with expertise in large software systems, computer graphics, high performance computing, and web technologies. I am highly proficient at designing and implementing software spanning multiple levels of system architecture. I have published numerous peer-reviewed research papers and co-authored a book on physically based rendering, for which I received an Academy Award in 2014. I won a North American Bridge Championship in 2016.

EXPERIENCE

Senior Software Engineer, Twitch, San Francisco CA

2017-Present

I am the technical lead for Twitch's "Extensions" project, an application development platform that allows third parties to create interactive experiences that extend the viewing experience for live video streams. I architected and implemented key components of this platform at all levels of the application stack. Because building a new development platform on a previously static web application required modifications to numerous systems across the company, I was also responsible for coordinating the development efforts and release strategies for those modifications, requiring a holistic understanding of the architecture of Twitch.

Director of Engineering, FanDuel, New York, NY

2015-2017

I led the development of FanDuel's social features, which launched in September 2016 to millions of users. Reporting directly to the CTO, and working closely with product and graphic designers as well as an international team of engineers, I imagined, designed, implemented, and launched FanDuel Friends Mode, a completely new way to use FanDuel to play fantasy sports with friends. In addition to coordinating the efforts of employees in New York, Edinburgh, and Orlando, I also personally implemented large portions of the system myself, including web, native mobile, API middleware, and microservice backends, as well as legacy PHP systems.

Staff Software Engineer, Google, Mountain View CA

2012-2015

I evaluated and implemented a number of critical features for the Skia graphics library to enable the Chrome web browser to run much faster and use less power, both on mobile and desktop platforms. Specifically, I re-architected how Chrome renders shadows (both on the CPU and GPU), scaling and caching of images, and streamlined a number of interactions between Blink and Skia. Chrome is now able to use the GPU to efficiently render web content on Android devices. I also took ownership of a number of in-house web-based development and productivity tools, including a web-based Skia sandbox and a performance / correctness regression system.

OptiX Software Lead, NVIDIA, Santa Clara CA

2010-2012

I designed and oversaw the implementation and optimization of several extremely complex features of the OptiX GPU ray tracing system, including out-of-core rendering for giant datasets, CPU fallback rendering paths (requiring runtime binary retargeting), interoperability between OptiX and general CUDA computations, support for user-provided shading functions, and many more. These features were crucial for the commercial success of OptiX and its integration into popular consumer applications such as Adobe After Effects CS6.

Software Architect, Bridge Winners

2011-Present

I completely redesigned and reimplemented the leading social network for contract bridge players, bridgewinners.com. This website provides articles, polls, and discussions for expert bridge players, as well as social games, real-time notifications, a mobile application, social editors for convention cards (extremely complex forms

required to play at live tournaments), an electronic book store, real-time scoreboards for live events, and much more. The site is implemented entirely from scratch due to the specialized nature of many of its components.

Bridge Teacher

2010-2012

Taught bridge and played professionally with dozens of students around the world. Lessons were conducted online, at the students' local bridge club, or as playing lessons at tournaments. In addition to playing and teaching, I also developed web-based software to maintain a database of all hands played and perform automated result analysis to find areas where students most need improvement.

Senior Scientist, Aggregate Knowledge, San Mateo CA

2008-2010

I designed and tested algorithms and data validation techniques for real time targeted advertising. Given millions of ad impressions, each containing a variety of data about the user viewing the ad, my software builds a mathematical model of click likelihood and expected impression value so that individual web page visits can be routed to appropriate ad campaigns or sold back to ad exchanges. In addition to designing and testing the mathematical model, I also worked closely with the production engineering team to put my algorithms in place in both our own targeted ad campaigns and real-time ad exchanges.

Assistant Professor of Computer Science, University of Virginia, Charlottesville VA

2002-2008

I conducted research and education in computer science at both the undergraduate and graduate levels. My primary research area was computer graphics, specifically focusing on scalability, general purpose computing using graphics hardware, real-time photorealism through precomputation, sampling strategies, information visualization, and secure remote rendering. My students and I published 22 peer-reviewed publications at conferences and in journals including SIGGRAPH, I3D, EGSR, IEEE Visualization, and Graphics Hardware. I also co-authored papers on computer architecture (ISCA) and stereo computer vision (3DIM), as well as general audience articles about GPU design (IEEE Computer) and visualization of video game behaviors (CACM). In addition to my research duties, I also co-authored a 1000+ page book on photorealistic ray tracing (with Matt Pharr), served on several NSF panels for Computer Graphics, gave multiple SIGGRAPH course lectures, and taught courses in computer graphics, rendering, theory of computation, and introductory computer science.

CTO, Ahpah Software, Mountain View CA

1997-2004

As co-founder of a small startup, I created a robust Java decompilation system called SourceAgain. Ours was a successful commercial decompiler despite the presence of numerous free alternatives. In my role as CTO, I designed all the algorithms that made SourceAgain highly robust (even to hand-assembled "torture" input), integrated our decompiler with multiple popular IDEs, created and manned a trade show booth at JavaOne, and managed two additional employees. I also created anti-reverse engineering technology that obfuscated Java code so that a decompiler would be unable to recover the original program flow. My obfuscation was not simple renaming, but rather a cryptographically sound security system with predictable, user-tunable performance impact. This technology was acquired by Intertrust.

In addition, I led a consulting effort to port the Netscape Enterprise web server to the Be operating system. Over a period of four months, I (along with one collaborator) ported the entire web server to a fledgeling operating system, working around kernel bugs and simultaneously porting key Netscape development tools (e.g., Python) to BeOS as well. Due to BeOS's extremely lightweight kernel threading mechanism, the resulting web server achieved Netscape's highest benchmark scores for any four-processor server at the time.

Research Scientist, Intertrust, Mountain View CA

1999-2001

I was solely responsible for creating a cryptographically sound obfuscation system for Intel executables. Building on my algorithms from Ahpah, I created a system that read Linux or Windows binaries, built a high-level

representation of program flow that could be easily manipulated, and implemented algorithms to hide information inside executables before writing them back to disk. This information could be used for obfuscation (hiding control flow), watermarking (to trace an executable back to the original owner), or tamper-resistance (to prevent modification). My software was very robust and was able to input, modify, and output executables as large and complex as Microsoft Word.

Research Assistant, Stanford Computer Graphics Lab, Palo Alto, CA

1997-2002

As a Ph.D. student at Stanford, I created the Chromium cluster rendering system to enable aggregation of multiple graphics cards in a cluster of workstations, supporting both parallel scalability and large display walls. Although Chromium was a research effort, I supported its deployment in several commercial production environments. Chromium was commercialized by multiple vendors including IBM, who shipped Chromium as part of their Deep View graphics cluster, and the Department of Energy who spun off a small company entirely dedicated to maintaining and enhancing Chromium.

EDUCATION

Stanford University, Palo Alto, CA

Ph.D. in Computer Science (with distinction in teaching), 2002

Princeton University, Princeton NJ

B.S.E. in Computer Science, *magna cum laude*, 1997

SKILLS

I am an extremely skilled systems programmer, especially in C, C++, Go, and Python on Windows, Macintosh, or Linux platforms. I have experience with many other programming languages. My development skills stem from a broad understanding of software and computer architecture at multiple levels of abstraction, years of training in problem solving for international mathematics competitions, and a disciplined approach to incremental testing. I am a very fast learner and could become an expert-level user of any software or development tool or approach on my own. I am also comfortable with mathematically sophisticated algorithms and publications, and can understand and implement such approaches including prototyping of complex mathematics (typically using Mathematica). I have an excellent command of both written and spoken English.

GRIGORI R. HUMPHREYS
CURRICULUM VITAE

Assistant Professor, University of Virginia
Department of Computer Science
<http://www.cs.virginia.edu/~humper>
humper@cs.virginia.edu

574 Fontana Drive
Charlottesville, VA 22911
Home: (434) 244-4033
Work: (434) 982-2220

INTERESTS Computer graphics, visualization, graphics architecture and stream computing

EDUCATION **Stanford University** (Stanford, CA)
Ph.D. in Computer Science with Distinction in Teaching, 2002
Advisor: Dr. Patrick Hanrahan
Dissertation:
A Stream Processing Approach to Interactive Graphics on Clusters of Workstations

University of Virginia (Charlottesville, VA)
M.S. program in Mathematics, 2007-present
Expected graduation: 2011

Princeton University (Princeton, NJ)
B.S.E. *magna cum laude* in Computer Science, 1997

RESEARCH **University of Virginia: Assistant Professor** (August 2002-Present)

EXPERIENCE

Stanford University: Research Assistant, Multigraphics (1997-2002)

Ahpah Software, Inc. : Co-Founder and CTO (1997-2004)

Intertrust Technologies Corporation: Visiting Researcher (1999)

Silicon Graphics, Inc.: Research Intern, IRIX64 Group (Summer 1996)

Silicon Graphics, Inc.: Research Intern, InfiniteReality Group (Summer 1995)

HONORS AND AWARDS

NATIONAL AWARDS

National Science Foundation CAREER Award (2004-2009)

Honorable Mention, Association of American Publishers Awards, 2004

The AAP judged that my textbook was the second best book in the Computer and Information Science category in 2004.

R&D Magazine R&D 100 Award (2004)

My ongoing cluster graphics research was selected as one of the 100 most technologically significant products or processes of the year. www.rdmag.com

PROFESSIONAL AWARDS

Best Panel, IEEE Visualization (2003)

Award received for my participation in this conference's most compelling discussion group. Our topic was the future of scalable graphics.

EARLY AWARDS

Distinction in Teaching, Stanford School of Engineering (2002)

Given to graduating Ph.D. students who have demonstrated a substantial commitment to teaching beyond the required amount.

Stanford School of Engineering Fellowship (1997-2000)

Given to the top 10% of the incoming Ph.D. students in each department (as selected by the admissions committee), this fellowship fully funds a graduate student's first three years, including tuition and stipend.

Andersen Consulting Prize in Computer Science (1997)

Given to the top graduating senior from the Princeton University Department of Computer Science (as selected by the faculty).

GRADUATE STUDENTS DIRECTED

CURRENT ADVISEES

Jiajun Zhu (PhD): Working on secure access to sensitive 3D models and new approaches to high quality 3D scanning using computer vision. Entered: Fall 2005. Expected graduation: 2010

Blake Sutton (PhD): Remote visualization. Beginning supervision: Spring 2007

Aprotim Sanyal (MS): High Dynamic Range Computed Tomographic Imaging. Beginning supervision: Spring 2007. Expected graduation: Fall 2008

GRADUATED ADVISEES

R. Peter Weistroffer (2003-2007): Graduated May 2006. Masters Project: *Multidimensional Adaptive Sampling and Reconstruction for Distribution Ray Tracing*.

Dale Beermann (2002-2004): Graduated May 2004. Master's project: *Scalable, Robust Visualization of Large Trees*.

Nolan Goodnight (2003-2005): Graduated December 2005. Masters project: *4D Compression and Relighting with High-Resolution Light Transport Matrices*.

PH.D. COMMITTEE MEMBER

Michael Spiegel
Pascal Vicare
William Greenwell
Jeremy Sheaffer

TEACHING EXPERIENCE

COURSES TAUGHT

University of Virginia: Assistant Professor

Fall 2007	CS 101:	Introduction to Computer Science
Spring 2007	CS 647:	Image Synthesis
Fall 2006	CS660:	Theory of Computation
Spring 2006	CS 150:	Introduction to Computing
Fall 2005	CS 445/645:	Introduction to Computer Graphics
Spring 2005	CS447/647:	Image Synthesis
	CS551/851:	Foundations of Graphics Research
Fall 2004	CS 445/645:	Introduction to Computer Graphics
	CS 551/851:	Modern Research in Computer Graphics
Spring 2003	CS 660:	Theory of Computation
	CS551/851:	Modern Research in Computer Graphics
Fall 2003	CS445/645:	Introduction to Computer Graphics
	CS551/851:	Modern Research in Computer Graphics
Spring 2002	CS447/647:	Image Synthesis
Fall 2002	CS 851:	Big Data in Computer Graphics

Stanford University

Fall 2000	CS 148:	Introduction to Computer Graphics
Summer 1999	CS 148:	Introduction to Computer Graphics

**UNDERGRADUATE
THESES ADVISED**

2003

Jeff Stricker: *A Visual Debugging System for Graphics Applications.*

Samir Roy: *Non-Photorealistic Rendering: Using Lit Spheres and Lit Cubes to Define Style.* **Finalist, SEAS Undergraduate R&D Symposium.**

2004

Vaibhav Kumar: *Automatic Bidding Methods for the Game of Bridge.*

2005

Joshua Waldman: *Smoothly Porting Software to the .NET Framework.*

Kimberly Dylla: *Aesthetic Deconstruction of a Manufactured Reality*
(Kim was an Echols Scholar – this is a Distinguished Major project jointly advised with Megan Marlatt in the McIntire Department of Art).

2006

Eric Capito: *Real-Time Photorealistic Reflections*

Lily Liu: *An OpenGL Debugging Engine*

Gillian Smith: *Automation of Image Stylization and Abstraction Using Human Perception Data.*

Ken Arthur: *An Integrated System for the Construction and Animation of 3D Models Using Sketch-Based Input*

2007

Erika Chin: *Inverse Color Management of Printers Using Adaptive Neighborhoods*

Jie Lu: *Adaptive 3D Laser Scanning*

Jacob Harr: *Rotation-invariant Descriptors for Surface Reflectance*

Stephen Lawrence: *Evolving Animation with Genetic Algorithms*

Ye Zhang: *Virtual Museum Floorplan Generation Using Shape Grammars and Evolutionary Search*

VISITORS AND POSTDOCTORAL FELLOWS

POSTDOCTORAL David Koller. 2006-present. Ph.D., Stanford University.
FELLOWS

EXTERNAL RESEARCH GRANTS AND CONTRACTS

CURRENT SUPPORT

DOE: *Institute For Ultra-Scale Visualization*. Amount: \$700,000. PI: Greg Humphreys. This grant establishes UVA as part of the SCIDAC Institute for Ultra-Scale Visualization, which I co-founded with Kwan-Liu Ma (University of California at Davis), Rob Ross (Argonne National Laboratory), Han-Wei Shen (Ohio State), Kenneth Moreland (Sandia National Laboratories), Nelson Max (University of California at Davis), John Owens (University of California at Davis), and Jian Huang (University of Tennessee at Knoxville). My title within this institute is "Director of Systems Research". (September 2006-August 2011).

NSF: *Establishing the SAVE Center: Studying Secure Dissemination and Archiving of 3D Cultural Heritage Projects*. Amount: \$340,000. PI: Greg Humphreys, co-PI Bernard Frischer (director of IATH). (January 2006-December 2008). (Originally co-PI; PI David Luebke left UVA).

NSF: *Enabling a 3D Digital Cultural Heritage Pipeline: From Acquisition to Archiving to Publication*. Amount: \$450,000. Co-PI with Bernard Frischer (director of IATH).

NSF CAREER: *Systems for Effective Visualization In Education and Engineering*. Amount: \$400,000 (October 2004-September 2009).

STEUART SYSTEMS: *3D-360 Panoramic Stereo Vision*. Amount: \$30,000. May 2007-August 2007.

PAST SUPPORT

STEUART SYSTEMS: *3D-360 Panoramic Stereo Vision*. Amount: \$30,000. October 2006-January 2007.

DOE Visual Interactive Environment for Weapons Simulation (VIEWS): *Scalable Visualization of Large Time-Varying Data Sets*. PI: Greg Humphreys. Amount: \$347,613. January 2003-December 2005.

DOE Visual Interactive Environment for Weapons Simulation (VIEWS): "A Parallel OpenGL Rendering Framework". Amount: \$179,148. Co-PI with Patrick Hanrahan, Stanford University. September 2000 - August 2001

EQUIPMENT SUPPORT

IBM: *Hardware Grant*. 4 IBM Blade Servers with CELL processors to support remote rendering research and general CELL architecture work. Approximate value: \$150,000. Grant approved June 2006, equipment received April 2007.

Steuart Investment Company: *Hardware donation*. 14 Pentium 4 computers and displays, approximate retail value \$5600. 10 computers placed into the general graduate student equipment pool. Donated August 2006.

ATI Technologies Inc: *Hardware support, Cluster Rendering Research*. Equipment donation (16 Radeon 9800XT cards), approximate retail value \$8000. Donated December 2003.

PENDING SUPPORT

NSF: *GOALI: TONE For Advanced Ultrasound Imaging*. Amount: \$330,000. PI: Bill Walker (Biomedical Engineering, UVA). Co-PI: Greg Humphreys. 3 year grant, to be submitted on September 15, 2007.

BOOKS AND PUBLICATIONS

BOOKS

Physically Based Rendering: From Theory to Implementation. Pharr, M. and Humphreys, G. 1041 pages. Morgan-Kaufmann Publishers, San Francisco (August 2004). This is a textbook for a second course in computer graphics, and dozens of scholarly research projects have built upon the theory presented in this book. It is currently in use at the University of Virginia, Stanford, Ohio State, University of Calgary, University of Texas Austin, University of Central Florida, Harvey Mudd, Simon Fraser University, University of Illinois Urbana-Champaign, University of Utah, National Taiwan University, Dalhousie University, and Instituto Nacional De Matemática Pura e Aplicada (Brazil).

JOURNAL ARTICLES

Kwan-Liu Ma, Robert Ross, Jian Huang, Greg Humphreys, Nelson Max, Kenneth Moreland, John D. Owens, and Han-Wei Shen. "Ultra-Scale Visualization: Research and Education". *Journal of Physics: Conference Series*, 78:012088 (6pp), June 2007.

Dale, K., Shaeffer, J., Kumar, V.V., Humphreys, G., Skadron, K., and Luebke, D. "Applications of Small-Scale Reconfigurability to Graphics Processors". To appear in *International Journal of Electronics*.

Dunbar, D.* and Humphreys, G. "A Spatial Data Structure for Fast Poisson-Disk Sample Generation", *ACM Transactions on Graphics (Proceedings of SIGGRAPH)*, Vol 25(3) (August 2006) (Acceptance rate: 20%)

Humphreys, G., Houston, M., Ng, Y., Frank, R., Ahern, S., Kirchner, P., and Klosowski, J. "Chromium: A Stream Processing Framework for Interactive Graphics on Clusters". *ACM Transactions on Graphics (Proceedings of SIGGRAPH)*, Vol 21(3) (August 2002). (Acceptance rate: 19%)

REFEREED CONFERENCE AND WORKSHOP PAPERS

Zhu, J., Wang, R., and Humphreys, G. "Precomputed Radiance Transfer for Real-Time Indirect Lighting using A Spectral Mesh Basis". *Eurographics Symposium on Rendering 2007* (Acceptance Rate: 35%).

Weistroffer, R., Walcott, K., Humphreys, G., and Lawrence, J. "Efficient Basis Decomposition for Scattered Reflectance Data". *Eurographics Symposium on Rendering 2007* (Acceptance Rate: 35%).

Zhu, J., Koller, D., Humphreys, G., and Steuart, S. "Fast Omnidirectional 3D Scene Acquisition with an Array of Stereo Cameras". *ACM Symposium on Three Dimensional Imaging and Modeling 2007*.

Walcott, K., Humphreys, G., and Gurumurthi, S., "Dynamic Prediction of Architectural Vulnerability from Microarchitectural State". *International Symposium on Computer Architecture (ISCA) 2007*. (Acceptance Rate: 22%)

Cheslack-Postava, E.*, Goodnight, N., Ng, R., Ramamoorthi, R., and Humphreys, G. "4D Compression and Relighting with High-Resolution Light Transport Matrices". *ACM Symposium on Interactive 3D Graphics and Games 2007*.

* Undergraduate Student

**REFEREED
CONFERENCE AND
WORKSHOP PAPERS
(CONT.)**

Wang, R., Ng, R., Luebke, D., and Humphreys, G. “Efficient Wavelet Rotation for Environment Map Rendering”, *Eurographics Symposium on Rendering 2006*, Nicosia, Cyprus (Acceptance Rate: 33%)

Dale, K., Shaeffer, J., Kumar, V.V., Humphreys, G., Skadron, K., and Luebke, D.. “Applications of Small-Scale Reconfigurability to Graphics Processors”. *International Workshop on Applied Reconfigurable Computing 2006*, Delft, The Netherlands. (Acceptance rate: 22%)

Beermann, D., Munzner, T., and Humphreys, G. “Scalable, Robust Visualization of Very Large Trees”. *Eurographics/IEEE Symposium on Visualization 2005*, Leeds, United Kingdom (Acceptance rate: 37%).

Hoobler, N.*, Humphreys, G., and Agrawala, M. “Visualizing Competitive Behaviors in Multi-User Virtual Environments”. *IEEE Visualization 2004*, Austin, TX (Acceptance Rate: 27.5%)

Bethel, E., Humphreys, G., Paul, B., and Brederson, J. “Scene Graph Enabled Distributed Memory Visualization and Rendering”. *IEEE Symposium on Parallel and Large Data Visualization and Graphics 2003*, Seattle, WA (October 2003).

Niederauer, C.*, Houston, M., Agrawala, M., and Humphreys, G. “Non-Invasive Interactive Visualization of Dynamic Architectural Environments”. *ACM Symposium on Interactive 3D Graphics 2003* (Acceptance rate: 26%)

Goodnight, N., Wang, R., Woolley, C., and Humphreys, G. “Interactive Time-Dependent Tone Mapping Using Programmable Graphics Hardware”, *Eurographics Symposium on Rendering 2003*. (Acceptance rate: 37%)

Goodnight, N., Woolley, C., Lewin, G., Luebke, D., and Humphreys, G. “A Multigrid Solver for Boundary Value Problems Using Programmable Graphics Hardware,” *Graphics Hardware*, San Diego, CA (July 2003). (Acceptance rate: 33%)

Humphreys, G., Eldridge, M., Buck, I., Stoll, G., Everett, M. *, and Hanrahan, P. “WireGL: A Scalable Graphics System for Clusters”. *ACM SIGGRAPH*, Los Angeles California (August 2001). (Acceptance Rate: 21%)

Humphreys, G., Buck, I., Eldridge, M., and Hanrahan, P. “Distributed Rendering for Scalable Displays”, *IEEE Supercomputing 2000*, Dallas TX (November 2000). (Acceptance Rate: 34%)

Buck, I., Humphreys, G., and Hanrahan, P. “Tracking Graphics State for Networked Rendering”, *Graphics Hardware*, Interlaken, Switzerland (August 2000) (Acceptance Rate: 45%)

Humphreys, G., and Hanrahan, P. “A Distributed Graphics System for Large Tiled Displays”, *IEEE Visualization*, San Francisco, CA (October 1999). (Acceptance Rate: 36%)

* Undergraduate Student

**CURRENTLY UNDER
REVIEW**

Frischer, B., Humphreys, G., and Koller, D. "Research Challenges for Digital Archives of 3D Cultural Heritage Content". *Submitted to ACM Journal on Computers and Cultural Heritage (JOCCH)*.

**MAGAZINE
ARTICLES**

Luebke, D., and Humphreys, G. "How GPUs Work". *IEEE Computer*, February 2007.

Goodnight, N., Wang, R., and Humphreys, G. "Computation on Programmable Graphics Hardware". *IEEE Computer Graphics and Applications*, September/October 2005.

Houston, M., Niederauer, C.*, Agrawala, M, and Humphreys, G. Visualizing Dynamic Architectural Environments. *Communications of the ACM*, August 2004.

**INVITED
SUBMISSIONS**

Niederauer, C.*, Houston, M., Agrawala, M., and Humphreys, G. "Non-Invasive Interactive Visualization of Dynamic Architectural Environments". *ACM Transactions on Graphics (Proceedings of ACM SIGGRAPH)*, Vol. 22(3) (August 2003).

* Undergraduate Student

PATENTS AND FORMAL COPYRIGHTS

PATENTS

Humphreys, G., and Martino, P. *Method for Reconstructing Debugging information for a Decompiled Executable File*. United States Patent 6,151,701 (November, 2000).

PROFESSIONAL SERVICE

PROFESSIONAL LEADERSHIP

Session Chair, Graphics Hardware. *SIGGRAPH 2007* (San Diego, CA)
Director of Systems Research, *Institute for Ultra-Scale Visualization* (September 2006-Present).
Session Chair, Death of the Digit. *Cultural Heritage and New Technologies Workshop*, Vienna, Austria. October 2006.
Workshop Chair, Serving and Archiving Virtual Environments, Co-located with 2006 *Computer Applications and Quantitative Methods in Archaeology* (Fargo, ND)
Ph.D. Symposium Chair, 2006 ACM SIGGRAPH Symposium on Interactive 3D Graphics (Redwood City, CA)
Publicity Chair, 2005 ACM SIGGRAPH Symposium on Interactive 3D Graphics (Washington, DC)
Workshop Chair, Parallel Visualization and Graphics 2003 (Seattle, WA)
Organizing Committee, Workshop on Commodity Clusters for Virtual Reality 2003 (Los Angeles, CA)
Organizing Committee, Workshop on Commodity-Based Visualization Clusters 2002 (Boston, MA)

PROGRAM COMMITTEES

2008
ACM SIGGRAPH Symposium on Interactive 3D Graphics
2007
ACM SIGGRAPH
IEEE Symposium on Interactive Raytracing
Graphics Hardware
Eurographics Symposium on Rendering
2006
IEEE Symposium on Real Time Raytracing
Graphics Hardware
ACM SIGGRAPH Symposium on Interactive 3D Graphics
2005
Graphics Hardware
ACM SIGGRAPH Symposium on Interactive 3D Graphics
2004
Eurographics Symposium on Rendering
Eurographics Symposium on Parallel Graphics and Visualization
Graphics Hardware
2002
Eurographics Workshop on Parallel Graphics and Visualization

UNIVERSITY SERVICE

Virginia Visualization Group (2004-Present)
Digital Humanities MA Committee (2007-Present)
BACS Committee (2005-2006)

SEAS SERVICE

SEAS Scholarship Committee (2005-Present)

DEPARTMENT SERVICE	Coordinator for Seminar Series (2006-2007)
	Diversity Committee (2006-2007)
	Faculty Recruiting Committee (2005-2006,2007-2008)
	Undergraduate Curriculum Committee (2004-2005,2007-2008)
	Graduate Admissions Committee (2002-2004,2007)
	Ph.D. Qualifying Examination Oral Committee (2003-2007)
	ACM Programming Team Coach (2002-2003)
	(Attended World Finals in Beverly Hills, CA, March 2003)
	Site Director/Judge, ACM Mid-Atlantic Programming Competition (2002-Present)
NATIONAL SERVICE	NSF Panelist, 2005
	NSF Panelist, 2007
REVIEWING	Eurographics (2004-2006)
	SIGGRAPH Papers (2001-2006)
	SIGGRAPH Courses (2003-2006)
	IEEE Visualization (2000-2006)
	Graphics Hardware (2001-2006)
	Eurographics Symposium on Rendering (2004-2006)
	IEEE Transactions on Parallel and Distributed Systems
	ACM Symposium on Computational Geometry 2004
	Graphics Interface 2004, 2005
	Computer Architecture Letters November 2003
	IEEE Visualization Applications 2003
	IEEE Parallel and Large-Data Visualization and Graphics 2003

OTHER SCHOLARLY ACTIVITIES

INVITED TALKS

“Secure Exploration of 3D Environments”, **Cultural Heritage and New Technologies Workshop**, Vienna, Austria (October 2006)

“Ultra-Fast Blue Noise Generation”, **Princeton University Colloquium** (May 2006)

“Secure Exploration of 3D Environments”, **Computer Applications in Archaeology**, Fargo, ND (April 2006)

“O(n) Blue Noise Generation Using Generalized Boundary Sampling”, **University of Richmond Colloquium** (March 2006)

“A Stream Processing Approach to Scalable Graphics on Clusters”, **Oak Ridge National Laboratories** (May 2003)

“Learning from the Stanford/DOE Visualization Cluster”, **IEEE Visualization** (October 2002)

“A Stream Processing Framework for Interactive Rendering on Clusters”, **DIMACS Workshop on Streaming Data Analysis and Mining** (November 2001)

“Stanford MultiGraphics/An Open Source Cluster Rendering API”, **Clemson University** (June 2001)

“Practical Systems for Scalable Rendering on Clusters”, **DOE Computer Graphics Forum** (May 2001)

“Chromium: Cluster Graphics as Stream Processing”, **Sandia National Laboratories** (February 2001)

“Scalable Rendering Using a Linux Cluster and Commodity Graphics Cards”, **Extreme Linux Developers Forum** (February 2000)

“Rendering for Tiled Displays”, **NVIDIA Corporation** (December 1999)

“Decompiling Java Bytecode with SourceAgain”, **Bay Area Java Users Group** (December 1997)

PANELS

“Commodity Graphics Accelerators for Scientific Visualization”, **Best Panel Award, IEEE Visualization** (October 2001)

COURSES AND TUTORIALS

ACM SIGGRAPH 2003: *Large-Scale Displays for the Masses.*

ACM SIGGRAPH 2001: *Commodity-Based Scalable Visualization.*

MAJOR SOFTWARE

Chromium: an open-source cluster rendering framework. Chromium has attained widespread acceptance in industry and research labs around the world as the *de facto* standard for driving large tiled displays and for interactive visualization of large datasets. Dozens of third parties have published papers about Chromium extensions, and entire companies have been formed around it. Released 2002.

PBRT: a physically-based ray tracing system. PBRT is the companion to my textbook *Physically Based Rendering: From Theory to Implementation*, published in 2004. PBRT presents the full implementation of a feature-rich rendering system, but it has pedagogy as its primary goal, as opposed to efficiency or feature completeness. This makes PBRT ideal for teaching advanced students about high quality rendering. It is in use in advanced graphics courses at multiple universities (complete list available in the publication section of this document). Released 2004.

TECHNICAL REPORTS

Dunbar, D., and Humphreys, G. “Using Scalloped Sectors to Generate Poisson-Disk Sampling Patterns”. University of Virginia technical report CS-2006-08 (extended supplement to our SIGGRAPH 2006 paper).

Roy, S., and Humphreys, G. “Style Spheres: Defining Style in NPR”. University of Virginia technical report CS-2004-22

Pharr, M., and Humphreys, G. “Monte Carlo Rendering with Natural Illumination”. University of Virginia technical report CS-2004-24

Beermann, D., and Humphreys, G. “Visual Computing in the Future: Computer Graphics as a Remote Service”. University of Virginia technical report CS-2003-16

Resources used by Greg Humphreys for Navistone Report

Stanford Internet whitepaper

<https://web.stanford.edu/class/msande91si/www-spr04/readings/week1/InternetWhitepaper.htm>

Google Analytics Developer Guide

<https://developers.google.com/analytics/devguides/collection/protocol/v1/parameters>

Direct conversations with NaviStone engineers and executives

Addendum to Expert Witness Report

Clarification on response to Plaintiff Paragraph #1 and #10

Newer versions of Navistone's Javascript do support the ability for click tracking. This is used to measure a user's level of engagement with a particular page.

This functionality was developed after Harriet Carter's contract with Navistone was terminated, and is disabled on the www.partsrus.shop test website to more faithfully recreate the functionality that Harriet Carter would have had in 2017.

Contrary to Plaintiff's claims of capturing all clicks, the only time any user click would have been registered for Harriet Carter would be when the user added an item to a shopping cart.



Greg Humphreys

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF PENNSYLVANIA

ASHLEY POPA, individually and on)
behalf of all others similarly situated,)

Plaintiff,)

V.)

HARRIET CARTER GIFTS, INC, a)
 Pennsylvania corporation, and)
 NAVISTONE, INC., a Delaware)
 corporation.)

Defendants.)

CIVIL ACTION NO. 2:19-cv-00450-PJP

REPLY EXPERT REPORT OF GREG HUMPHREYS

Reply to Rebuttal Expert Report of Michael Springer

I have reviewed Mr. Springer's rebuttal report, and generally agree with most of its contents. Below I list some of the places where we are not in agreement. Also enclosed is my own analysis of the functionality of the NaviStone OneTag Javascript library, to support the fact that Mr. Springer and I agree substantially on the functionality therein, although we draw different conclusions. Nothing in Mr. Springer's report has led me to change any of my conclusions.

Page 8

Report states "while partsrus.shop is being provided by the Defense's expert witness as a comparison to the expectations of interaction that occurred on harrietcarter.com". This is not accurate. Partsrus.shop is not intended to be a replication of the experience on Harriet Carter. Partsrus.shop is meant to be a place where we could install and use NaviStone's software and we would be sure that the software wouldn't change or be removed during the lifespan of this case. Nothing in my report ever stated that partsrus.shop was meant to replicate the "expectations of interactions" on harrietcarter.com.

Based on my discussions with NaviStone engineers, I understand that the software installed on partsrus.shop, and the installation procedure of that software, are largely representative of what would have been present on Harriet Carter's website, but not identical. This is to be expected, as software is improved and modified over time.

The partsrus.shop website was useful to my analysis but not the sole basis of my conclusions.

Page 9

Report states "Several other cookies shown in the screenshot above originated from another website running OneTag that had already been visited during my analysis, and will be there to track the user when navigating to other websites that have also installed OneTag." NaviStone does not perform any cross-site tracking, as stated repeatedly in my report. Therefore the analysis on this page of first vs. third party cookies addresses software features that **do not exist**. While the NaviStone patent covers this potential capability, the implementation of NaviStone's software does not contain it.

As a holder of multiple patents, I can confirm that it is common practice to make patents as broad as possible, to maximize the inventor's protection. There is no reason to assume that because a capability exists in a patent, that it exists in the eventual implementation.

Page 10

Report refers to “Neustar Javascript” setting a cookie that “can be used as a way to identify a user across sessions of different websites that are also running this same Neustar JavaScript.”. This is incorrect. There is no Javascript from Neustar.

Page 11

Report states that OneTag “will emit a GET request”. This is accurate and does not contradict any conclusions from my report. The communication between OneTag and NaviStone’s servers is unique and does not rely on any interception or re-routing of communications.

Page 15

Report contains a section entitled “Analysis Across Websites”. There is no basis for the conclusions made in this section. NaviStone does not connect user behavior across multiple websites, as stated numerous times in my report.

Page 25, Conclusion 1

Report states that information is “transmitted to a server that was not the user’s intended recipient of such data entered.” This is wrong. NaviStone operates **on behalf** of their clients; the software that initiates the transmissions is installed on the clients’ websites deliberately and as part of their business practice. Nearly every single website on the internet communicates with a variety of servers in order to function, as shown many times in my report, and as should be well known to anyone with even a passing understanding of how the World Wide Web works. NaviStone is not some separate entity operating outside the scope of Harriet Carter’s website; its capabilities were embedded in Harriet Carter’s website explicitly by Harriet Carter. NaviStone does not, and indeed cannot, install or uninstall their software on any third party’s website. Harriet Carter must have installed NaviStone’s software on their website deliberately.

Finally, this conclusion describes the capabilities outlined in a patent, not the actual implementation of OneTag.

Page 26, Conclusion 2

Again we see discussion of transmissions to “not the intended recipient”, and NaviStone being “unknown to the user”. I repeat my objections to this language from the previous conclusion. When, in my report, I showed that the Federal District Court for the Western District of Pennsylvania logs every single keystroke to “search.usa.gov” (a much more aggressive form of data collection than NaviStone ever employed), it would not be reasonable to argue that these

keystrokes are being transmitted to “not the intended recipient” and that “search.usa.gov” is “unknown to me.” This is not a sound argument.

Page 26, Conclusion 3

Same as above regarding the “intended recipient”. Furthermore, a technical analysis of Javascript cannot possibly know a user’s intention.

Page 26, Conclusion 4

NaviStone is acting ***on behalf*** of Harriet Carter. Even if the communications were interceptions (***which they most emphatically are not***), Harriet Carter could not intercept its own communications.

Page 26, Conclusion 5

Again, users are not tracked across websites. The report does not demonstrate this, nor could it, since NaviStone does not do this.

Page 27, Conclusion 6

Loading scripts from multiple servers and registering callbacks for Javascript events for analysis is universal and the backbone of almost all modern websites. See my report for numerous examples. Nothing about this programming model constitutes an interception of electronic communications.

Page 27, Conclusion 7

I have no disagreements about Mr. Springer’s conclusion on the real-time nature of data collection. The temporal properties of data collection do not have an effect on my conclusion regarding whether or not NaviStone is intercepting electronic communications.

Page 28, Conclusion 8

I am not a lawyer, and therefore cannot opine on the legal definition of a “device”. OneTag certainly doesn’t meet the common language definition of a device, and nothing about using Javascript events to communicate the data present on a web page meets my professional understanding of “interception of electronic communications.”

Javascript Code Findings

In this section I present specific findings from the production of Navistone's core Javascript code, as well as the client-customized code for Harriet Carter itself. Note: for clarity and brevity, certain "logging" lines have been omitted here; these lines are intended to emit human-readable debugging information and are not relevant to the operation of the code produced.

First, please note that NaviStone's entire technology stack relies fully on a user's web browser supporting and enabling JavaScript. If a user were to disable JavaScript in their browser, NaviStone's software would not function at all.

Initialization

The NaviStone core Javascript library initializes itself immediately by installing a "document ready" handler: a snippet of code that will run once the HTML provided by the web service is loaded and ready to be inspected. I ran the Harriet Carter-specific Navistone code (obtained through the Wayback Archive at https://web.archive.org/web/20170827080041js_/https://code.murdoog.com/onetag/C1939693F72E10.js) through the JavaScript beautifier at beautifier.io, to produce a new file I will refer to as "beautify_harriet_carter.txt". In that file, we see this initialization at line 2416:

```
MGX.docReady(function() {  
    MGX.main(MGX.procs)  
})
```

All that is happening here is that the so-named main functionality of NaviStone's analysis is being postponed until the HTML document is ready for analysis. Once the document is ready, a number of procedures, named "procs" above, are provided to the main NaviStone entry point. For Harriet Carter, these procedures include the following discrete steps (see "beautify_harriet_carter.txt" line 132:

1. Determine the current web page "type"
2. Get the client's ID (vestigial and hardcoded by NaviStone)
3. Determine if the user's email address is on the current page
4. Process the loaded page and build the communication to NaviStone
5. Install any additional event handlers for events to be consumed (e.g., add-to-cart clicks)

Analysis Postponed Until Document Ready

It is important to understand that NaviStone's software doesn't run until a web page's document is "ready": that is, all the elements that will make up the layout and presentation of the page are present. By definition, this can only happen once all the initial communications with the web server (e.g., Harriet Carter) are complete. Then, only the delivered web page is examined.

This postponement is performed by the “docReady” function, seen in the previous subsection. The code for docReady can be found in “core.js”, beginning on line 2229. Rather than analyze its exact behavior, I will simply point out that it is a functionally identical copy of the top-voted StackOverflow answer for “how to call a function when the page/DOM is ready for it”, which can be found here <https://stackoverflow.com/questions/9899372/pure-javascript-equivalent-of-jquerys-ready-how-to-call-a-function-when-t>. At the time of this writing, the answer from which the domReady function is derived is marked as “correct” and has 2048 upvotes.

In addition to waiting for the document to be ready, NaviStone’s “main” function further delays its analysis for a fixed period of time in an attempt to allow any potential asynchronous network communications to complete, further demonstrating that NaviStone is only interested in analyzing the contents of the fully rendered page, and not intercepting any communication.

Page type determination

NaviStone first determines the type of the page being viewed. Each client of NaviStone receives a hand-crafted set of “definitions” as part of their customized Javascript code. Each custom definition can optionally contain an “identifier” function that, if present, is queried to determine if the current page is of a certain type. For example, in beautify_harriet_carter.txt, line 2174, we see:

```
homepage: {
  identifier: function() {
    return n.location.pathname == "/" ||
MGX.stringCheck(n.location.pathname, ["/default", "/index"])
  },
  priority: 0,
  Label: "Category",
  CategoryId: "0",
  CategoryName: "Homepage",
  Canonical: function() {
    return MGX.getCanonical()
  },
  v19: MGX.LocalTagFunctions.GetMetaData
}
```

This definition will report that the page with a URL consisting of “/” or “/default” or “/index” will be classified as the homepage.

Detecting email presence

NaviStone is interested in the presence of a user’s email on the page. To reiterate, NaviStone does not want the email address itself, merely a yes/no signal to determine if the user has provided their email address to the retailer (the presence of an email address suggests that the

user is likely to prefer electronic communication and would lower the likelihood that a user would receive a direct mailing).

To do this, the “handleEm” method is invoked after the web page is loaded (core.js, line 1446):

```
handleEm: function() {  
    this.getEm();  
    this.setEmEvt()  
}
```

This function performs two separate actions: it first scans the existing page for any emails (the “getEm” call), and then installs additional event handlers to determine if any subsequent changes to the page might contain emails as well (the “setEmEvt” call). This second step is useful for handling input form fields where the user might type an email address.

The “getEm” function can be found in core.js, line 1403. I will present it here in two parts, as it is somewhat long. In the first part, the code looks for any form input fields, examines the contents of each to see if those contents appear to be a valid email address, and if one is found, that fact is recorded. These lines can be found starting at line 1408 of core.js:

```
mgx.each(mgx.szl('input'), function (i, v) {  
    if (mgx.isValidEmFld(v)) {  
        var em = mgx.getRegex(mgx.regex.Email, v.value.toLowerCase());  
        if (mgx.isValidEm(em)) {  
            mgx.setCookie('MGX_C', '1', null, true);  
        }  
    }  
});
```

The important thing to understand about this code is in the final line that sets the “MGX_C” cookie. It is not set to the just-found **value** of the email, but only to the number “1”, indicating the presence of an email without revealing its value.

The second portion of the function is very similar; it examines the body of the web page and its URL for the presence of any likely emails, and also sets the MGX_C cookie:

```
var fem = mgx.getPageText().match(/([\w-\.] + @ [\w-\.] + \. [a-z]{1,3})/gi),  
    uem = mgx.getRegex(mgx.regex.Email, mgx.Url);  
if (uem !== '') {  
    if (fem)  
        fem.push(uem);  
    else  
        fem = [uem];  
}
```

```
if (fem) {
    mgx.each(fem, function (i, v) {
        var em = v.toLowerCase();
        if (mgx.isValidEm(em)) {
            mgx.setCookie('MGX_C', '1', null, true);
        }
    });
}
```

Again, we see not the value of the discovered email being saved in a cookie, but only a single “1” value to indicate that an email was found. In the next section, we will see that this cookie is communicated as part of the standard NaviStone payload.

Even in historical versions of NaviStone’s code, where emails were gathered (rather than the simple yes/no signal shown above), the presence of the email was used internally as a yes/no signal only. The email itself was not used to generate any communication, nor was it ever shared with any third party.

Building the NaviStone Communication Payload

The heart of the NaviStone core Javascript system is invoked next. After some bookkeeping, we find the primary, very large “commit20” function that builds the oft-referenced Base64-encoded payload that has been decoded in Plaintiff’s complaint and above in this report. This function begins on line 1563 of core.js. It is much too large to examine line-by-line here, but we can easily see some things going on that should be familiar.

The function mostly concerns itself with building a data structure tersely named “t”, which will contain a number of fields to eventually be sent to NaviStone. For example, we can see on line 1579:

```
t.v = mgx.VisitorId;
t.m = mgx.MgxVisitorId;
```

These correspond directly to the “v” and “m” fields present in Plaintiff’s complaint, paragraphs 36 and 37, and above in this report. We can see that by building up this “t” object, the fields that will eventually be communicated to NaviStone are determined.

In “commit20”, we see (line 1568) the aforementioned “MGX_C” cookie being read:

```
emac = mgx.getCookie('MGX_C', true)
```

With the presence of this value eventually reflected into the all-encompassing “t” structure by the logic at line 1584:

```

if (mgx.Em !== '') {
    t.e = mgx.Em;
}
else if (emac !== '') {
    t.e = '1';
}

```

While this code does appear to have the ability to place an arbitrary value in the “e” field of the “t” structure, this first clause is historical and has no way to currently be executed in NaviStone’s code. The second “else” clause will therefore always be run, and the “e” field will either be absent from the “t” structure, or else set to “1”.

There is considerable logic in the “commit20” function, but none of it places any contact or personal information for the browsing user into the “t” structure.

Once the “t” structure is complete, it is placed in a list called “commits”. The place in core.js where this happens depends slightly on what kind of page is being viewed, and multiple payloads might be encoded in some instances (e.g., if a shopping cart is being viewed, there would be one payload for each item in the cart).

Finally, at line 1874 of core.js, we can see for each entry in the “commits” array, the payload is base-64 encoded and placed in the communication URL, as shown in Plaintiff’s screenshots in paragraphs 34 and 37:

```

for (var i = 0; i < commits.length; i++) {
    mgx.cd.push(commits[i]);
    var req = new mgx.ajax((m === 'pixel' ? mgx.PixelApi :
mgx.BaseApi) + mgx.AccessKey);
    req.addUrlParam('v', mgx.VisitorId);
    req.addUrlParam('m', mgx.MgxVisitorId);
    req.addUrlParam('se', mgx.SessionId);
    req.addUrlParam('d', mgx.base64.encode(commits[i]));
    ...
}

```

The payload is then sent to NaviStone (core.js, line 1889), corresponding to the communications captured by Plaintiff in screenshots in Paragraphs 34 and 37.

Click Handling

Finally, after Navistone’s custom communication has been delivered, event handlers are installed on the page, if the page requires them. This is done similarly to how the page type is determined, by using a series of custom event handlers provided by NaviStone in the client’s custom per-page definition. The event handler installation can be found at line 1166 of core.js:

```

handleEvents: function () {
    var mgx = this;
    if (typeof mgx.evset === 'undefined') {
        mgx.evset = true;
        mgx.each(mgx.Def, function (k, v) {
            if (k.indexOf('_event') > -1) {
                if (typeof v.pages === 'undefined' ||
                    v.pages.indexOf(mgx.pg) > -1) {
                    mgx.setEvent(v.type, v.elements, v.target,
                                v.handler, v.debug);
                }
            }
        });
    }
}

```

The functions ending in “_event” that the code is searching for are present in the custom client code provided by NaviStone. There is only one such event handler present in the Harriet Carter code: the handler for adding items to a shopping cart (beautify_harriet_carter.txt, line 2381):

```

addtocart_event: {
    pages: ["home", "product", "category", "search"],
    type: "click",
    elements: t,
    target: function() {
        var n = MGX.getElementsWith("cart,basket,bag",
                                    "input,button,img");
        return MGX.getElementsWith("add", n)
    },
    handler: function() {
        MGX.commit("action", {
            Action: "AddToCart",
            Data: {
                CartClick: n.location.pathname
            }
        })
    }
}

```

Here in the “handler” function we can see another reference to the “commit” function that was used earlier to send a payload to NaviStone. By structuring their code this way, NaviStone will cause a new encoded payload to be sent to their servers whenever the matching page elements are clicked. Notice that this communication is computed similarly to the payload described in the previous section, is triggered by a mouse click, and involves absolutely no intercepted communications to or from Harriet Carter. It is a novel, unique communication between the user’s browser and NaviStone, triggered by a physical user action, not another communication.

EXHIBIT 4

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF PENNSYLVANIA

- - -

ASHLEY POPA, : CIVIL ACTION
individually and on : 2:19-cv-00450-wss
behalf of all others :
similarly situated, :
:
Plaintiff, :
:
vs. :
:
HARRIET CARTER GIFTS, :
INC., and NAVISTONE, :
INC., :
:
Defendants. :

Thursday, October 22, 2020

Oral Deposition of ASHLEY POPA, taken at
4072 Mitchell Road, New Castle, Pennsylvania
16105, commencing at 9:55 a.m., before Kaitlyn
Muchnick, a Notary Public for the Commonwealth
of Pennsylvania.

1 indicated that you did not visit Harriet
2 Carter after your summer of 2017 -- '18 visit
3 with Mr. Lynch, correct?

4 A. Correct. I don't recall going back on
5 their website.

6 Q. Now, I want to confirm, you've never
7 purchased any product from Harriet Carter,
8 correct?

9 A. Correct.

10 Q. And you don't recall receiving any
11 catalog or other promotional material?

12 A. Correct.

13 Q. Have you ever asked Harriet Carter to
14 send you a catalog or promotional material?

15 A. Not that I recall.

16 Q. Did you ever register with Harriet
17 Carter's website?

18 A. From what I remember, two years ago,
19 almost two years ago when I was on their site,
20 I remember a pop-up coming up when I went onto
21 their website that asked me to enter my email,
22 and I believe I did so at that point.

23 Q. Okay. So that would have been on your
24 first visit to the website; is that right?

1 A. From what I remember.

2 Q. Okay. And you said that was about two
3 years ago?

4 A. Well, it was beginning of 2018, so at
5 least two years ago.

6 Q. Now, are you aware that websites have
7 privacy policies?

8 A. I am aware of that now.

9 Q. And prior to filing this lawsuit, were
10 you aware of that?

11 A. No.

12 Q. Did you ever -- so you had no knowledge
13 one way or another about whether websites had
14 privacy policies?

15 A. Correct.

16 Q. And you certainly never looked at one,
17 correct?

18 A. Correct. I never looked at one.

19 Q. Now, once you had your meeting with
20 Mr. Lynch, after that, did you ever look at a
21 website privacy policy?

22 A. No.

23 Q. In your meeting with Mr. Lynch, did he
24 advise you as to whether or not Harriet Carter

1 typing your information into the Harriet
2 Carter website?

3 A. Yes. I recall entering an email in the
4 pop-up, and then I remember going to the
5 search bar and searching for pet steps -- pet
6 stairs.

7 Q. And when you entered your email into
8 the website, you then submitted it; is that
9 fair?

10 A. I don't know if I hit the actual submit
11 button. I can't remember. I know some
12 websites won't let you get past that pop-up
13 screen without hitting submit and others will
14 let you click out of it, so I'm not sure how
15 their website was setup at the time. I can't
16 remember that far back.

17 Q. Okay. But you recall providing them
18 with your email address, correct?

19 A. Correct.

20 Q. So I want to turn to the next exhibit.
21 And we may come back to this, so if you want
22 to just put it aside, that would be great.

23 So I'd like to bring up Exhibit 2,
24 Answers to Interrogatories. Do you see that?

1 A. Correct.

2 Q. Have you ever asked a company to stop
3 sending you promotional mails?

4 A. I will unsubscribe from emails.

5 Q. Have you ever asked a company to stop
6 sending you physical mail, like catalogs?

7 A. No.

8 Q. I'd like you to read your response to
9 number 3, and then confirm for me as you have
10 for the other two.

11 And is that -- does that answer
12 continue to be accurate and consistent with
13 your verification?

14 A. Yes, it's correct.

15 Q. Now, your meeting with Mr. Lynch took
16 place in the summer of 2018, correct?

17 A. Yes.

18 Q. And prior to your agreeing to becoming
19 a client for purposes of this case, did he
20 give you any information about what to do with
21 the records of your browsing activity?

22 A. We actually checked my phone together
23 at that time, and there was no history of
24 Harriet Carter or NaviStone on my phone in the

1 cookies or the browsing history, which I don't
2 understand the difference, but we did check.

3 Q. So, at that meeting, you had your phone
4 with you, and Mr. Lynch looked both at the
5 browsing history and also the cookies, and
6 there was no record of any Harriet Carter
7 cookies; is that correct?

8 A. Correct.

9 Q. And there was no record of any cookies
10 that you were aware of that might be
11 associated with NaviStone; is that correct?

12 A. Correct.

13 Q. Did you look at the phone to see if
14 there were cookies from any other companies?

15 A. We just pulled up my browsing history,
16 and I don't remember specific what was on
17 there, but nothing we were looking for was on
18 there.

19 Q. Is it possible you looked at other
20 companies to see if there were cookies from
21 other websites or a record of browsing other
22 websites?

23 A. I don't recall.

24 Q. Now, do you remember whether the

1 Q. So we can talk about the new phone in a
2 moment.

3 You no longer have possession of the
4 phone that you used to browse Harriet Carter;
5 is that correct?

6 A. That was my old phone, correct.

7 Q. So you don't have that phone?

8 A. Correct.

9 Q. And so let me state my question again.

10 Once you deleted the history and
11 cookies from the phone you used to visit
12 Harriet Carter, it would be impossible for
13 anyone to replicate the search you did when
14 you met with Mr. Lynch?

15 A. Correct.

16 Q. When did you get your new phone?

17 A. I believe it was the month of October,
18 but again, I'm not sure the exact year. It
19 wasn't this October, though. It would have
20 been 2019 or '18, but I don't recall.

21 Q. So it could have been in the fall after
22 your meeting with Mr. Lynch?

23 A. Correct.

24 Q. But not earlier than that?

1 - - -

2 THE VIDEOGRAPHER: All right. The
3 time is 11:16 a.m. We are back on the record.
4 BY MR. BERTONI:

5 Q. Good morning, Ms. Popa.

6 A. Good morning.

7 Q. So we were talking about the iPhone
8 that you used to visit Harriet Carter's
9 website.

10 Do you recall that testimony?

11 A. Yeah, yes.

12 Q. And the iPhone in question was referred
13 to in your Answer to Interrogatories, an
14 iPhone 6; is that correct?

15 A. Yes.

16 Q. And when did you acquire that phone, do
17 you recall?

18 A. I don't recall.

19 Q. And it's fair to say, though, that you
20 had that phone during the period in which you
21 visited Harriet Carter's website?

22 A. Correct.

23 Q. And that you did not use another device
24 or phone to visit Harriet Carter's website; is

1 that correct?

2 A. Correct.

3 Q. So, with regard to that phone, when you
4 met with Mr. Lynch, prior to that meeting, had
5 you backed up your phone in any way?

6 A. I believe my phone does an automatic
7 backup. It's not something I do. I think it
8 just does it.

9 Q. And just so I'm clear about this, did
10 you ever use a computer to back up that phone?

11 A. No.

12 Q. Did the discussion with Mr. Lynch
13 include any discussion of using a computer to
14 back up your phone?

15 MS. IVERSON: Objection to the
16 extent you're calling for privileged
17 communications.

18 To the extent that you discussed
19 this forum before you asked about whether you
20 could become a plaintiff in this suit, and
21 then you can answer.

22 MR. BERTONI: Thank you.

23 BY MR. BERTONI:

24 Q. So my question is, prior to becoming a

1 client, did you discuss the question of
2 whether the phone should be backed up to a
3 computer or was backed up to a computer?

4 A. No.

5 Q. And when you mentioned the phone doing
6 automatic backups -- I think that was your
7 testimony; is that fair? Was that your
8 testimony that whatever backing up was done
9 automatically; is that right?

10 A. Yeah. I believe my phone back up --
11 does a backup on its own. I'm not really sure
12 how that works, but I didn't do it.

13 Q. One of the features that iPhone allows
14 is a backup to your iCloud account.

15 Are you aware of that?

16 A. To some extent, I understand how that
17 works.

18 Q. In connection with this lawsuit, have
19 you looked to see whether there are any
20 backups of this iPhone 6 in your iCloud
21 account?

22 A. Yes. There's nothing.

23 Q. When did you search for that?

24 A. I don't recall.

1 A. All the time.

2 Q. And that was true both before and after
3 your meeting with Mr. Lynch?

4 A. I notice it now more. I don't know if
5 it's because I'm paying attention to it now
6 because of this case, and before, maybe it was
7 there and I just didn't really put it
8 together. But I can't say before, but I can
9 definitely say now I notice it.

10 Q. And do you know what Google Analytics
11 is?

12 A. No.

13 Q. Do you know what an online advertising
14 network is?

15 A. No.

16 Q. Are you aware of -- so you're on your
17 iPhone, and what program are you using to
18 search the web, to browse the web? Is it
19 Safari?

20 A. Yes.

21 Q. Yeah. That's the -- you can install
22 other ones, but that's -- have you ever
23 installed another web browser on your phone?

24 A. No.

1 about what those websites were?

2 A. No.

3 Q. And do you recall thinking at the time
4 that you hadn't visited any of them?

5 A. Correct.

6 Q. And so my question is, did you ever
7 have a similar conversation with Mr. Lynch
8 prior to being a client of his about any other
9 website-related claims?

10 A. No.

11 Q. Okay. So we were talking about the
12 question of harm, and I want to drill down a
13 bit on that.

14 First of all, when you visited the
15 Harriet Carter website, did you ever put any
16 items in the shopping basket?

17 A. Yes. I searched for pet stairs and
18 added them to the shopping basket, and started
19 to fill out forms to make that purchase.

20 Q. And did you ever enter your email
21 address on the site other than in connection
22 with that initial screen that appeared?

23 A. I don't recall.

24 Q. Now, we talked about your browsing

EXHIBIT 5

IN THE UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF PENNSYLVANIA

ASHLEY POPA, : CIVIL ACTION NO.
Individually and on : 2:19-CV-00450-WSS
behalf of all others :
similarly situated, :

Plaintiff :

vs. :

HARRIET CARTER GIFTS, :
INC. and NAVISTONE, :
INC., :

Defendants :

VIDEOTAPE VIDEOCONFERENCE DEPOSITION
OF MICHAEL E. SPRINGER

Taken remotely via Zoom Video
Communications at Carlson Lynch, LLP, 1133 Penn
Avenue, Pittsburgh, Pennsylvania 15222, on Friday,
October 23, 2020, commencing at 10:04 a.m., before
Sara J. Vanchure, Notary Public.

- - -

1 employs any kind of analytics? Does it use, for
2 example, Google Analytics to engage with customers?

3 A. I cannot provide a definite answer. I do
4 not work on the marketing website. I primarily work
5 on feature development in the application platform.

6 Q. So you have not looked at the JazzHR
7 website to see if it has, for example, Google
8 Analytics?

9 A. I have looked at it. I've not
10 investigated whether or not it's running a specific
11 analytics code.

12 Q. Okay. So we're going to get to that in a
13 moment. What is your understanding of Google
14 Analytics?

15 A. I have a very limited understanding of
16 Google Analytics. It's not something I've spent a
17 large amount of time with, but it -- in the broadest
18 sense, it aggregates data based on visitors to provide
19 information back to the website owner to inform them
20 about how web pages are performing, where traffic is
21 coming from.

22 Q. Does Google Analytics -- I know in your
23 report you talk about interception and we'll get
24 involved in that in a second, but does Google

1 Analytics intercept communications from website
2 visitors?

3 A. To the best of my knowledge, I don't
4 believe so. I can't speak a hundred percent to Google
5 Analytics. That's not something I have a lot of
6 experience with beyond just seeing it gather that a
7 visit has occurred to a web page.

8 Q. So -- but are you familiar generally with
9 how behavioral analytics works on the web?

10 A. Somewhat, yes.

11 Q. And do you know whether or not the
12 methodology employed by Navistone is similar to or
13 different from how other companies employ behavioral
14 analytics?

15 A. I think there are similarities between
16 the way that Navistone's software works; but I also
17 think that there are significant differences, as
18 identified, one, with the patents, but specifically
19 with my observations of the software itself.

20 Q. Did you make an inquiry to determine
21 whether the descriptions of activities in the patent
22 corresponded to actual activity that is Navistone has
23 deployed?

24 A. I'm not sure I understand the question.

1 go to Neustar?

2 A. At least what I'm able to observe from
3 their JavaScript, they provide Neustar a visitor ID
4 that is generated upon a user's visit, which in turn
5 they receive back a segment value to identify the --
6 what I'm assuming in this case is like some specific
7 identifier about what the locale of the user. Beyond
8 that, that's all I was able to observe for information
9 shared.

10 Q. Now, let me ask you this question.
11 How -- describe to me how the visitor ID is provided
12 to Neustar. If you can walk me through that process,
13 that would be helpful.

14 A. Okay. So the visitor ID is provided to
15 Neustar via what is referred to as a query parameter.
16 It is a value past or included in the URL that is the
17 request for the resource. So it is provided to its --
18 to Neustar's server in the request and then from there
19 the request is able to be parsed on a server and then
20 a proper response is able to be received.

21 Q. So that the -- you observed the
22 JavaScript code sending a communication to Neustar?

23 A. Yes.

24 Q. And that communication contained the

1 visitor ID that had been created by the JavaScript
2 code?

3 A. Yes.

4 Q. And in connection with the transmission
5 of that communication, was there any other information
6 you observed going to Neustar apart from the visitor
7 ID?

8 A. There is not.

9 Q. And so that you then saw some
10 communication coming back from Neustar to Navistone?

11 A. That's correct.

12 Q. And what did you observe in that
13 communication?

14 A. The responding communication from Neustar
15 is a strain of JavaScript referred to as JSON-P,
16 J-S-O-N-P. It stands for JavaScript Logic Notation
17 with Padding. It is a security workaround to get past
18 the cross site request restrictions. The idea is that
19 it's a piece of arbitrary JavaScript that contains a
20 payload because the JavaScript is unable to make a
21 proper API request to their server to receive it
22 directly, it has to receive it wrapped in a piece of
23 JavaScript to execute on its end.

24 Q. Okay. So let's break that down a second.

1 Q. If I were to tell you that that
2 information is simply the equivalent of a yes or no
3 arriving from Navistone to Neustar, would that --
4 would that be inconsistent with your observations?

5 A. The -- I -- I would partially agree.
6 It's -- it would appear to be -- if it's a yes or no,
7 it appears to be a yes, but with like different
8 context given that the -- my understanding is that the
9 number can come back based on the deposition of
10 Mr. Cavanaugh that there are a series of numbers that
11 can come back and if it's all zeros then that is a no
12 and if it is one of several other numbers then it is I
13 guess to your point a yes, but with some sort of
14 additional context tied to it.

15 Q. And do you know whether Navistone can
16 interpret or obtain that additional context based upon
17 what's sent to it?

18 A. I do not.

19 Q. And did you review the depositions to
20 determine if there's an answer to that question?

21 A. I do not recall seeing any information
22 about that.

23 Q. So that we have the JavaScript making a
24 communication to Neustar and then Neustar is sending

1 sent to Navistone stone -- where they go physically,
2 where the servers are located?

3 A. My understanding is that the Navistone
4 servers are located in the U.S. east location for --
5 or for Amazon web services, which is in Virginia.

6 Q. And when you say that the ESE services
7 are -- servers are located in the Virginia, is that
8 the physical location of the servers?

9 A. I believe so.

10 Q. And so let's then talk a minute about
11 what happens sequentially when the Navistone code
12 runs. So someone comes to visit the Harriet Carter
13 website. What's the first thing that happens?

14 A. The first thing that happens when a user
15 visits the Harriet Carter website is the markup for
16 the web page is loaded within the user's web browser
17 on their machine.

18 Q. Okay. What is the markup?

19 A. Markup is hypertext markup language. It
20 is the basis of all web page structure. It is how
21 texts and images are instructed to render on a user's
22 machine.

23 Q. Okay. So that's the first thing that
24 happens. What happens next?

1 A. The markup informs the web browser that
2 it needs to request additional resources.

3 Q. And what does that mean?

4 A. It means that -- the markup itself is
5 plain text. The web browser is then instructed that
6 it needs to gather more information to complete the
7 render of the web page such as images, style sheets,
8 and JavaScript.

9 Q. And when you say that it asks the browser
10 the instruction, for -- well, let me strike that. Am
11 I correct in saying that what it's doing is asking the
12 visitor's web browser software for permission to do
13 certain things?

14 A. I believe you could phrase it like that,
15 yes.

16 Q. And is it possible to change the answer
17 to that request based on the settings of your browser?

18 A. That is correct.

19 Q. And what are the things that you can
20 change that would, for example, deny permission to a
21 website?

22 A. You can disable JavaScript outright.

23 Q. And if you disable JavaScript outright,
24 would Navistone's code run?

1 A. It would not.

2 Q. And what else can you do?

3 A. You can make use of third party
4 extensions such as ad blockers which can identify
5 specific domains with which resources can be denied to
6 load from.

7 Q. Okay. And what else can you do?

8 A. If you want to get super technical, you
9 can -- at the level of your own computer, deny certain
10 domains' connections to --

11 Q. Could you also --

12 A. Sorry.

13 Q. Go ahead.

14 A. Go ahead.

15 Q. No, I didn't mean to cut you off. I'm so
16 sorry.

17 A. You can basically reroute domains for
18 resources so they will not load either or come from an
19 alternative location.

20 Q. And what about cookies? Can you set your
21 browser to deny cookies?

22 A. You are able to set your browser to deny
23 cookies. You can set your browser to accept all
24 cookies and you can set your browser to deny third

1 party cookies, only allowing first party cookies
2 belonging to that domain.

3 Q. And just for a second, are there any
4 other settings that you can think of that could affect
5 the response of your browser to the request for
6 permission that come from the website?

7 A. The only thing that I could think of is
8 some sort of network level restriction set by a
9 systems administrator or some other like IT
10 management.

11 Q. Okay. So the website then asks for
12 permission to do certain things and, as I understand
13 it, the permission is to obtain resources from other
14 locations; is that right?

15 A. That is correct.

16 Q. And describe to me what kinds of
17 resources might be requested.

18 A. The other kinds of resources requested
19 are images and style sheets which provide the
20 information about how to render the parts of the web
21 page and JavaScript code.

22 Q. Anything else you can think of?

23 A. You can load music files. You can load
24 3D objects. There's kind of a pretty exhaustive list

1 of the kinds of resources that can be loaded within a
2 web page.

3 Q. And one of those is JavaScript?

4 A. That is correct.

5 Q. And in this case the Navistone code is
6 one of those JavaScript resources that gets loaded
7 onto the web page; is that right?

8 A. That is correct.

9 Q. And permission is asked and received in
10 order to load that JavaScript?

11 A. That is correct. Because the Harriet
12 Carter, in this case, website's markup says I need to
13 load the Navistone JavaScripts, it is -- it is
14 instructed to do so and it makes the request to
15 load -- or to fetch and execute the JavaScript on the
16 web page.

17 Q. And that only happens when the browser
18 gives it permission to do so; correct?

19 A. That is correct.

20 Q. And in connection with obtaining an image
21 from another -- well, let me strike that. When these
22 requests go out, do they often go to different servers
23 other than the originating server for the website?

24 A. They can. Typically a -- the resources

1 Q. Okay. So the JavaScript code is now
2 operating within the website code; is that correct?

3 A. That is correct.

4 Q. Now, we've talked about ways that that
5 might not happen, but let's presume that it's
6 operating. One of the first -- let's talk about what
7 the first thing -- or strike that. Can you describe
8 if there are any other intervening things that occur
9 before the Navistone JavaScript runs?

10 A. Can you clarify intervening?

11 Q. Sure. So you've got the permission that
12 was granted. The Navistone code is essentially
13 delivered to the visitor; correct?

14 A. Correct.

15 Q. And it is now part of the code for that
16 web page; correct?

17 A. Correct.

18 Q. What happens next?

19 A. Well, the JavaScript will execute once
20 the page has completed loading.

21 Q. And what does it mean for the page to
22 have completed loading?

23 A. All requested resources have been
24 retrieved and the -- there is an event admitted within

1 the browser to say that the DOM, the document object
2 model, has been completely loaded.

3 Q. Got it. And do you know whether there's
4 any additional functionality in the JavaScript code
5 that causes some waiting period before the Navistone
6 code runs?

7 A. The only thing I can recall is that it is
8 loaded in a manner called asynchronous. So it's --
9 there is a sort of waiting period, but other than
10 that, no.

11 Q. Do you know how long that waiting period
12 is?

13 A. Milliseconds. It's not something I've
14 measured, but it is quite short.

15 Q. If there was testimony that in fact the
16 JavaScript adds a three-second delay to its own
17 operation after page load has been completed, is that
18 consistent with your observations or not?

19 A. That -- that is not something I have
20 observed during my observation.

21 Q. Okay. So the page has been fully loaded
22 and what -- let's focus now on the question of is
23 there anything else that happens before the JavaScript
24 code that Navistone authored runs?

1 A. Not that I can recall.

2 Q. Okay. By the way, how does -- how did
3 the JavaScript code -- well, let me ask you the
4 following question. What did -- what had to happen to
5 the Moosejaw -- or strike that. What happened to --
6 what had to happen to the Harriet Carter website for
7 it to make a request to receive Navistone's
8 JavaScript?

9 A. In order for the Harriet Carter website
10 to provide the instructions to request the Navistone
11 JavaScript, a script tag would have had to have been
12 included within the markup itself.

13 Q. So within the hypertext markup language
14 of the website, this tag needed to be included?

15 A. That is correct.

16 Q. And do you know how that tag was placed
17 on the Harriet Carter website?

18 A. My understanding is it was included by an
19 employee of Harriet Carter.

20 Q. And -- so we now have all the events
21 preceding the running of the code you've described.
22 What happens next?

23 A. The next thing that happens is an
24 initialization function is called from within the

1 Q. As of August. So -- got it. So that at
2 least as early as August, potentially earlier, it
3 wasn't being transmitted?

4 A. That is correct.

5 Q. And so if someone went to visit the
6 website of Harriet Carter in 2018, the content of form
7 fields would not have been transmitted; correct?

8 A. That is correct, just the fact that a
9 form field had been populated.

10 Q. And was there any functionality in the
11 code to collect key strokes in form fields?

12 A. Not specifically key strokes, no, just
13 the fact that a blur event had occurred.

14 Q. Now, there's some websites that in fact
15 have code that collects individual key strokes;
16 correct?

17 A. That is correct.

18 Q. And can you identify some of those?

19 A. Not off the top of my head, but that is a
20 core piece of the JavaScript functionality where
21 you're able to detect key presses, key release, and
22 identify what key was pressed.

23 Q. But that wasn't implemented in the
24 Navistone code; correct?

1 things you were filling out, I think that would be
2 treatable as like an interception.

3 Q. Okay. So let's talk about that. When --
4 is it an interception then, in your opinion, when
5 information is sent directly to Navistone upon the
6 occurrence of a blur event?

7 A. Yes.

8 Q. And do you know, in looking at the
9 Harriet Carter website, whether information was sent
10 to Harriet Carter in connection with the blur events
11 that were triggering communications to Navistone?

12 A. Based on my observations, when a blur
13 event would occur, the request would only be made to
14 the Navistone address.

15 Q. Do you know in your observation of the
16 Harriet Carter -- meaning -- let me strike that.
17 Meaning that upon the blur event the only thing -- the
18 only communication that would occur would be a direct
19 communication to Navistone; is that correct?

20 A. Referring to communication as a network
21 request, a get request being made to Navistone, yes.

22 Q. Yes, and is -- would there be any other
23 kind of communication that we're talking about?

24 A. Well, the communication we would be

1 A. Okay.

2 Q. Unless and until a user submits that
3 information on the Harriet Carter website, it does not
4 go to Harriet Carter; is that correct?

5 A. It does not.

6 Q. It remains in a form field that is on the
7 browser instance that is running on the user's
8 computer; correct?

9 A. That is correct.

10 Q. And if I sit down and I write a letter --
11 and I want to use your example -- and I write that
12 letter with the intention of sending it to my friend
13 but I decide never to send that letter, has there been
14 a communication?

15 A. There has not been a transmission of the
16 letter. So if that is required for communication,
17 then I would say, no, there is not one.

18 Q. Well, in connection with this case and
19 your expertise, irrespective of what the statute may
20 provide, is there a communication in the example you
21 gave when a form is filled out, but is never
22 transmitted or sent to anyone? It stays on your desk.

23 A. I guess at that point I would say, no,
24 that would not be communicated. The user has not

1 completed their information or typing at that point.

2 Q. A communication requires a sender and a
3 recipient; correct?

4 A. I believe so, yes.

5 Q. And in the absence of a recipient, it
6 isn't a communication; correct?

7 A. I believe that is also correct.

8 Q. So that -- let's go to the Harriet Carter
9 website, and I think we've established that when I
10 type in information into a form field nothing happens
11 with that information in terms of its transmission to
12 anyone as long as I am in that form field and have not
13 left it; is that correct?

14 A. That is correct.

15 Q. And so if my cursor is flashing at the
16 end of the word that I've typed in, so far there's no
17 communication; correct?

18 A. That is correct.

19 Q. And if I go outside of that form field
20 by, say, tabbing out of it, that act of tabbing out
21 causes a communication to occur on the Harriet Carter
22 website when the Navistone code is running; correct?

23 A. That is correct.

24 Q. And what that tabbing out does is it

1 causes a direct communication to Navistone either of
2 the content of the form field which occurred earlier
3 in Navistone's business or the fact of information
4 having been put into that form field being transmitted
5 to Navistone; is that correct?

6 A. That is correct.

7 Q. Now, does anything in the JavaScript tell
8 Navistone what was intended to be written into the
9 form field? So let me -- let me back up. I'm
10 going -- I go to the Harriet Carter website. There's
11 a field that says name and I type in my name and then
12 I tab out and the JavaScript from Navistone is
13 running. Does Navistone receive information to tell
14 it that that was a name form field that I typed in?

15 A. Based on my observations, yes. The pages
16 are configured to identify specific fields.

17 Q. Now, are there -- is there a listing of
18 the fields to which this information collection
19 occurs? So, for example, are there some fields that
20 are designated as fields in which a blur event will
21 cause a transmission to Navistone?

22 A. Yes, that is correct.

23 Q. And what are those fields?

24 A. Not specifically -- one second. There

1 A. Of data from outside of Harriet Carter?

2 Q. No, of Harriet Carter. So, for example,
3 in connection with the cookie syncing, does
4 information like form field information, like click
5 information, like the payload that is created and send
6 sent to Navistone directly, is any of that information
7 provided to Neustar?

8 A. Not that I'm aware of.

9 Q. And so this cookie syncing occurs, and
10 correct me if I'm wrong. What it results in is
11 Neustar having effectively a table that allows it to
12 now which of its cookie IDs are -- can be matched to a
13 Navistone cookie ID; is that correct?

14 A. That is my understanding of it, yes.

15 Q. And in both -- in the case of the
16 Navistone cookie ID, that is an anonymous ID; correct?

17 A. That is correct.

18 Q. In providing that cookie ID to Neustar,
19 there is no personally identifiable information that
20 Navistone provides to Neustar; correct?

21 A. Based on that unique identifier, no.

22 Q. And you're not aware of Navistone in any
23 other way providing personally identifiable
24 information to Neustar, are you?

1 A. I am not aware of any other internal
2 workings or how data is shared between organizations.

3 Q. But you have looked at the JavaScript
4 code and what it transmits and it's fair that it does
5 not transmit any personally identifiable information
6 to Neustar; correct?

7 A. That is correct.

8 Q. And in connection with that process,
9 cookie syncing requires Neustar to have had its own
10 cookie on the browser instance on which Navistone's
11 cookie has been placed; correct?

12 A. That is correct.

13 Q. So, for example, unless there is a cookie
14 to be matched, unless there is a Neustar cookie, there
15 is no way to add to Neustar's chart some corresponding
16 Neustar cookie from which an address might be
17 obtained; correct?

18 A. That is correct.

19 Q. And so one would have to search the
20 cookies of the browser instance to see if there was a
21 Neustar cookie to be able to determine if that
22 particular visitor was de-anonymized; correct?

23 A. That is correct.

24 Q. And do you know whether in this case the

1 in this case ever visited the Harriet Carter website,
2 do you?

3 A. I do not, no.

4 Q. And you don't know whether any cookies
5 associated with the operation of Navistone's code ever
6 were placed on the browser instance used by the
7 plaintiff to visit Harriet Carter; correct?

8 A. That is correct.

9 Q. Okay. So let's go back to this -- let me
10 pull it up again, the BuiltWith page that we put in
11 Carlson Lynch. Do you see that?

12 A. Yes.

13 Q. Do you know whether Google Analytics's
14 JavaScript code employs click events that would
15 transmit information to Google servers in the same
16 fashion that Navistone's JavaScript code does?

17 A. I'm not aware.

18 Q. You don't know one way or another?

19 A. I have not had extensive research or time
20 with Google Analytics. So I'm not a hundred percent
21 on the air workings or how it functions without
22 additional time.

23 Q. Would it surprise you to learn that it
24 had the same click event kind of transmissions to the

1 Google servers?

2 A. No, it wouldn't.

3 Q. And, in fact, that's a common JavaScript
4 event used by behavioral tracking code; correct?

5 A. That is correct.

6 Q. And what about the blur events? Is that
7 also a common event that is used in JavaScript code by
8 behavioral tracking services?

9 A. Not that I'm aware of; but if you're
10 tracking if someone has clicked on something, I would
11 believe you would probably track if they have tabbed
12 away from something.

13 Q. And with regard to other kinds of events,
14 what are some other common JavaScript events that are
15 used in behavioral tracking, whether by Google or
16 anyone else?

17 MS. IVERSON: Object to the form. You
18 can answer.

19 THE WITNESS: I don't have a lot of
20 experience with behavioral tracking. That's not
21 something I've worked with directly in my professional
22 experience.

23 BY MR. BERTONI:

24 Q. Okay. And we'll get to that in a minute;

1 audiences? Do you see that?

2 A. I do see that, yes.

3 Q. Okay. And so let's go back and let's
4 click on at the very top of the page Google Analytics.
5 You see that?

6 A. Yes.

7 Q. And is that a similar -- based on your
8 knowledge and experience is that a similar kind of
9 report on the usage of Google Analytics?

10 A. It appears to be, yes.

11 Q. And down on the page it talks about
12 29,134,826 live websites using Google Analytics. Is
13 that --

14 A. Yes, that's correct.

15 Q. Is that consistent with your
16 understanding of how ambiguous Google Analytics is on
17 the web?

18 A. That is correct.

19 Q. Now, does Google Analytics have the
20 capacity to transmit information to Google servers
21 based upon a blur event?

22 A. Based on the information I have been
23 informed today, I mean it seems possible.

24 Q. Are you aware of it ever doing that?

1 A. Not that I am, no.

2 Q. And the same with regard to a click
3 event. Is that something that Google Analytics can
4 cause to have information sent to its servers?

5 A. I believe so.

6 Q. And does it also obtain information after
7 a page is loaded and send that information to Google?

8 A. Yes, it does.

9 Q. And does it have the capacity to obtain
10 information while a page is loading and before that
11 page load is completed?

12 A. It would have the capacity to. That
13 JavaScript has the ability to load ahead of the
14 website finishing.

15 Q. And although Google -- strike that.
16 Although JavaScript has that ability, you did not see
17 that exercised with -- in connection with the
18 Navistone code; correct?

19 A. That is correct.

20 Q. So I want to go back just briefly just to
21 make sure we've buttoned this down. What is your
22 expertise? What is the expertise you bring to bear in
23 this case?

24 A. My expertise specifically is around

1 A. JavaScript was the primary one at the
2 time, yes.

3 Q. And when was that?

4 A. Between the years of 2008 and 2012.

5 Q. And at the time, JavaScript being the
6 primary front end website technology, is that fair --
7 is that -- did I use the right vocabulary on that?

8 A. That is correct. There is no other
9 languages at that time that could be executed within
10 the browser.

11 Q. And why is that?

12 A. Due to popularity, adoption of the web
13 browsers, it became a standard.

14 Q. And are there -- does the web browser
15 software place limits on what JavaScript can do?

16 A. It does.

17 Q. And what are those limits?

18 A. JavaScript is not able to access things
19 outside of its own sandbox or browser window unless
20 the browser window has created a child window so that
21 way it is not able to interfere with other websites or
22 applications. It cannot access the file system
23 directly. It cannot access information about the
24 computer itself. It is restricted to the website it

1 is operating within.

2 Q. Let me walk through that.

3 A. May I have a brief break?

4 Q. Of course you can. It's 2:07. Let's
5 come back in 10 minutes?

6 A. Thank you.

7 Q. Great.

8 MS. IVERSON: Thank you.

9 MR. BERTONI: Great. Thanks. And any
10 time please don't hesitate to ask.

11 THE VIDEOGRAPHER: Going off the record
12 at 2:07 p.m.

13 (A brief recess was taken.)

14 THE VIDEOGRAPHER: We are back on the
15 record at 2:21 p.m.

16 BY MR. BERTONI:

17 Q. So welcome back, Mr. Springer. I'm now
18 testing the ability of my brain to maintain
19 information over the break and return to the spot I
20 began at. So we talked about limitations that the
21 browser places on JavaScript that is running on a web
22 page. Do you recall that?

23 A. Yes, I do.

24 Q. And one thing that I believe you

1 work as to the -- the level of understanding among
2 users as to where to look for privacy policies on web
3 pages? Anything that could help us understand that?

4 A. My understanding is most users don't read
5 privacy policies or are unaware of them.

6 Q. Okay. Now, one of the things that we've
7 talked about is that when you visit a web page it --
8 in most websites your interaction with that page will
9 cause communications to go to third party servers; is
10 that correct?

11 A. In the instances where a third party
12 JavaScript is set up, yes.

13 Q. And that's fairly common; right?

14 A. Depending on the services used, it is
15 pretty common, yes.

16 Q. And there are also third party
17 communications in retrieving content for the website
18 which can occur; correct?

19 A. That is correct.

20 Q. We talked about this that there's a
21 series of things that are used to build a web page
22 that is presented to the visitor and more often than
23 not the content of that page comes both from the
24 website's server and from third party servers; is that

1 fair?

2 A. That is fair.

3 Q. And that's the way the web has been for a
4 long time; correct?

5 A. That is correct, yes.

6 Q. At least going back 10 years; right?

7 A. Correct.

8 Q. Maybe 20; correct?

9 A. Yes.

10 Q. And unlike communications that might
11 occur over the telephone or in person, there's no way
12 to know what those third party communications are
13 unless you go under the hood of a website and look at
14 its code; correct?

15 MS. IVERSON: Object to the form. Go
16 ahead. You can answer.

17 THE WITNESS: There would be no way to
18 know without observation of network requests or the
19 website itself providing transparencies about those
20 communications.

21 BY MR. BERTONI:

22 Q. So one place you could find out is if you
23 went to a privacy policy; correct?

24 A. That is correct.

1 interception?

2 A. I guess short of observing the act of
3 payload that is being sent to the third party.

4 Q. So it would require looking at what is
5 being sent? Is that how you would determine if
6 there's an interception?

7 A. I believe so, yes.

8 Q. That absent knowledge of what the content
9 is of what's being sent, you would not have an
10 interception occurring; is that correct?

11 A. That is my understanding, yes.

12 Q. And that's your opinion here; correct?

13 A. Yes.

14 Q. And let's talk about content being sent.
15 If a JavaScript tag causes a click event to be sent to
16 a third party server and the information that is sent
17 is that the add to cart functionality button has been
18 clicked and nothing more, is that an interception?

19 A. Just the fact that a button was clicked?

20 Q. Yes.

21 A. I guess it provides the substance of the
22 communication that a shopping cart button was clicked,
23 but outside of that information --

24 Q. That's not an interception?

1 violation if they are not made aware.

2 BY MR. BERTONI:

3 Q. So when someone goes to the Carlson Lynch
4 web page and navigate -- so let's go to that page. We
5 can get out of the BuiltWith and just go directly to
6 Carlson Lynch, and I want you to click on cases at the
7 top and I want you to scroll down that page and I want
8 you to stop where it says, "Active cases wage and
9 hour." You see that?

10 A. (Witness complies.) Yes.

11 Q. And if I were to click on the, "Are you
12 an exotic dancer," you see that? Click on that.

13 A. Okay.

14 Q. Do you know what information is sent to
15 Google Analytics concerning that click and where it
16 was destined to go?

17 A. No, I do not.

18 Q. Would it surprise you that Google
19 Analytics now has information that the visitor to this
20 website clicked on a link in response to a question of
21 whether they are an exotic dancer? Do you know that?

22 MS. IVERSON: Object to the form. You
23 can answer.

24 THE WITNESS: No, I would not be

1 surprised about that.

2 BY MR. BERTONI:

3 Q. And is that an interception if the
4 visitor is unaware that that information is going to
5 Google Analytics?

6 A. If that's based on the previous
7 statements, then yeah. My -- my navigation to whether
8 or not I'm an exotic dancer would be transmitted to
9 Google Analytics.

10 Q. And are you aware of any information on
11 the Harriet Carter web pages and product pages that
12 might be as sensitive as the question about whether
13 you're an exotic dancer?

14 A. Aside from contact information or my
15 purchasing habits?

16 Q. Aside from that.

17 A. No, not that I can think of.

18 Q. Would you agree with me that disclosing
19 information to a third party about whether you are an
20 exotic dancer or not might be a surprise to a person
21 visiting a law firm's website and inquiring as to
22 whether they might have a claim based on their being
23 an exotic dancer?

24 MS. IVERSON: Object to the form. You

1 Q. And we've already established I think
2 based on your testimony that that is wiretapping under
3 the Pennsylvania law in your instance, for example?

4 A. Given that I did not provide an express
5 consent to that information to be shared, yes, that
6 would be wiretapping.

7 Q. So what is Base64?

8 A. So Base64 is an encoding scheme to
9 convert characters into something that can be
10 transmitted across the wire in a network request
11 without it being corrupted or, if it is corrupted, it
12 will come in as an incomplete string and not be able
13 to be decoded correctly.

14 Q. And is it something that is intended to
15 conceal information being transmitted on the web? Is
16 that a purpose for Base64?

17 A. No. It would not be useful as a
18 concealing or encryption mechanism. It is a widely
19 understood scheme. It is kind of more akin to a
20 Caesar cipher where certain characters are just traded
21 out for other characters.

22 Q. And so correct me if I'm wrong. It is
23 meant to improve the quality of information
24 transmission that occurs online; is that fair?

1 report by Greg Humphreys. Are you -- you're aware of
2 that; right?

3 A. I am.

4 Q. And did you have a chance to analyze
5 Mr. Humphrey's report?

6 A. I did.

7 Q. And to the extent that you found any
8 information in that report to be inaccurate, would
9 that be reflected in your report?

10 A. I believe so, yes.

11 Q. And did you find anything presented in
12 Mr. Humphrey's report to be inaccurate?

13 A. I do not believe so.

14 Q. Now, one of the things that -- I want to
15 go down this to the very end. You have a section on
16 page 15, OneTag on harrietcarter.com, and let's keep
17 going. You indicate at the top of page 16 that you
18 analyzed a OneTag view of the Wayback Machine. What
19 is the Wayback Machine?

20 A. So the Wayback Machine is an archival
21 system provided by the internet archive. It is a
22 mechanism used to keep snapshots of web pages at
23 previous dates and time and can be used as a way to
24 identify websites in previous iterations.

1 Q. So that you can use it to see what a
2 website was like at a given time that it was recorded
3 by the internet archive; is that right?

4 A. Provided that a snapshot was taken, that
5 is correct.

6 Q. And is that something that you found to
7 be reliable in connection with the work you do?

8 A. I do find that to be reliable, yes.

9 Q. And as an expert it's something that you
10 would rely upon in connection with obtaining
11 information about websites as they existed at
12 historical points in time?

13 A. That is correct.

14 Q. And so that here, consistent with your
15 practice, you used the Wayback Machine to visit what
16 the Harriet Carter website looked like at various
17 points this time and determine a number of things
18 about those pages, including whether or not
19 Navistone's code was present; is that right?

20 A. That is correct.

21 Q. Now, when you go to the website of
22 Harriet Carter at any one of these historical points
23 in time, is the Navistone JavaScript code encrypted?

24 A. It is not encrypted, no.

1 Q. And anyone wanting to look at the
2 Navistone JavaScript code could do so if they had
3 knowledge about how to access the HTML of a web page;
4 correct?

5 A. That is correct.

6 Q. And you didn't have to do any special
7 translating or decryption to understand what the
8 Navistone JavaScript was doing; correct?

9 A. I did not.

10 Q. And so you were able to take the
11 Navistone JavaScript from the Wayback archive on the
12 pages in which it was present and use that for your
13 analysis; is that right?

14 A. That is correct.

15 Q. Now, I'd like to go to the page 24 and
16 you've got Analysis and Conclusions. Do you see that?

17 A. I do.

18 Q. Now, it says based upon the results of
19 the analysis of OneTag functionality described in the
20 patent and based on its current form on partsrus.shop,
21 burpee.com, and roadrunnersports.com and historic
22 versions of the harrietcarter.com -- "of
23 harrietcarter.com along with my reading of the code,
24 it is my analysis and opinion that," and then you have

1 communication was transmitted?

2 A. Contextual information about what page
3 they are on, what they are searching, products they
4 are looking at, any selections they have made, but not
5 specifically the contents of the let's say the name or
6 contact information fields.

7 Q. So that what was in the form fields --
8 once that change was made -- and we talked about the
9 date in the summer of 2017. Once that change was
10 made, information that was typed into a form field was
11 not transmitted to Navistone's servers; correct?

12 A. Correct.

13 Q. You might know other things about what
14 appeared on the loaded page, but whatever was in that
15 form field was not transmitted; correct?

16 A. The contents of a form field were not
17 transmitted. That is correct.

18 Q. Okay. So that -- let's go to paragraph
19 2. Is there anything in paragraph 2 that relies upon
20 what is in the patent?

21 A. I do not believe so.

22 Q. Okay.

23 A. I'm sorry. I lost my place.

24 Q. That's okay.

1 A. I bumped the mouse.

2 Q. And now paragraph 3, anything in that
3 that relates to information from the patent?

4 A. No.

5 Q. Now, let's look at this. It says, "For
6 each and every visitor to the Harriet Carter website
7 from August 2017 through November 2018, the above
8 information would be automatically collected from the
9 website visitor and those contents would be
10 transmitted to Navistone." Do you see that?

11 A. Yep.

12 Q. What is -- what contents are being
13 transmitted?

14 A. The contents include the URL, queries for
15 the URL, information on the page such as the title,
16 the current click count, information about the product
17 being viewed or if it's added to cart, currency values
18 for subtotals, the -- and any like additional
19 information that is transmitted as part of a standard
20 get request.

21 Q. So when you say to gather contents from
22 other form fields, what other form fields do you
23 believe it was continuing to gather content from? See
24 that in the first sentence? It says, "After August

1 2017 it continued to gather contents from other form
2 fields." What contents from form fields?

3 A. At that point in time, while it was no
4 longer gathering the specific content, it was still
5 identifying when a form field was filled out.

6 Q. So, in other words, there would be a
7 communication that basically said, yes or no, there
8 was content in the form field, but it would not
9 transmit the content that had been typed into that
10 form field; correct?

11 A. Correct.

12 Q. So, in other words, Navistone's server
13 would receive information that a form field had been
14 filled out and tabbed out of, right, or otherwise
15 exited and that information would not send to
16 Navistone the data that had been typed into that
17 field; correct?

18 A. That is correct.

19 Q. Okay. And that's true after August 17th,
20 2017 for sure, but could also go to an earlier period
21 if it turns out the code was changed, say, in June or
22 July; right?

23 A. That is also correct.

24 Q. You made your best judgment as to coming

1 up with a date that certainly was in the period of
2 when that change had occurred; correct?

3 A. That judgment call was made based on the
4 earliest archive copy I could find.

5 Q. Good. Now, let's go to paragraph 4. It
6 says -- first of all, does anything in the patent
7 inform what you're saying here?

8 A. It does not.

9 Q. And is this paragraph limited to any
10 period of time?

11 A. It is not.

12 Q. And it says -- if you look at -- I'm
13 trying. It's a very long sentence, but go up from the
14 bottom three lines up. It says, "Information within
15 form fields." Do you see that?

16 A. Yes.

17 Q. And I read this to say that Navistone's
18 code is transmitting information within form fields.
19 Is that a fair reading of that?

20 A. That would be a fair interpretation of
21 that, yes.

22 Q. But it's not true that that was happening
23 after the change in the summer of 2017 that Navistone
24 made to its website?

1 A. No. It should instead be information
2 about the form fields.

3 Q. Okay. And let me be clear it's not
4 Navistone's website, but Navistone's code. So that --
5 that is true, but information within the form fields
6 stopped being transmitted when Navistone changed its
7 code in the summer of 2017; correct?

8 A. Correct.

9 Q. Now, the information you're talking about
10 about the form fields is simply a binary whether they
11 included information or not; correct?

12 A. That is correct.

13 Q. The next paragraph, "For any web user
14 that did not have third party cookies disabled and
15 browsed the website with the OneTag deployed, those
16 users would be tracked across websites, including
17 harrietcarter.com." Do you have any evidence that
18 Navistone tracked users across websites?

19 A. Aside from the shared cookie that was
20 appearing across browser sessions between different
21 websites having deployed Navistone's code, I do not
22 know explicitly whether or not they had actually
23 tracked the user, just that there is an identifier
24 that was shared between them.

1 Q. And you can use an identifier like that,
2 but not track users across web pages; right?

3 A. That is possible, yes.

4 Q. And that's up to Navistone to decide what
5 it wants to do with whatever IDs or cookies are
6 associated with its JavaScript code; correct?

7 A. I mean just because they're collecting it
8 doesn't mean that -- and they're not doing anything
9 bad with it doesn't mean that it still can't be used
10 in that practice.

11 Q. Correct. It depends on what the practice
12 is; right?

13 A. Correct.

14 Q. We know -- or at least I think we do. We
15 can share this conclusion that Google does track
16 people across web pages; right?

17 A. To the best of my knowledge, yes.

18 Q. It deploys a Google domain cookie and
19 that cookie is set in browser instances and Google
20 collects information about that cookie ID across many
21 websites where Google JavaScript code is present;
22 correct?

23 A. Correct.

24 Q. But do you have any evidence of Navistone

1 doing anything like that?

2 MS. IVERSON: Object to the form. Go
3 ahead. You can answer.

4 THE WITNESS: The only evidence that I
5 can observe is that there is a cookie containing a
6 shared identifier across instances.

7 BY MR. BERTONI:

8 Q. And you do not have any evidence of
9 Navistone using that cookie to track the activities of
10 browsers across websites; correct?

11 A. I do not.

12 Q. Now, if we go to the next paragraph, is
13 that -- paragraph 6, does any of this come from the
14 patent?

15 A. It does not. It stems from my
16 observation and explanation as to how everything is
17 tied together.

18 Q. And what about paragraph 7?

19 A. That is also relating to specific
20 observations of the JavaScript itself.

21 Q. Is that also true of paragraph 8?

22 A. Paragraph 8 is my understanding of the
23 usage or definition of device as defined by the
24 Wiretap Act.

1 A. I am not.

2 MS. IVERSON: Object to the form. You
3 can answer.

4 BY MR. BERTONI:

5 Q. And are you aware of there being
6 different interpreting standards that are applied to
7 statutes that do not impose criminal penalties for
8 violation?

9 MS. IVERSON: Object to the form. You
10 can answer.

11 THE WITNESS: I am not.

12 BY MR. BERTONI:

13 Q. And you have testified that the Wiretap
14 Act was written some time ago; correct?

15 A. That is correct.

16 Q. And can you remind me when your
17 recollection is of when that statute was written?

18 A. My understanding it was written in 1978.

19 Q. Now, at that time was there anything
20 equivalent to the World Wide Web and the
21 communications that we've been discussing regarding
22 visits to the Harriet Carter website?

23 A. I do not believe so.

24 Q. When did the World Wide Web -- when was

1 performing an action which is data being transmitted
2 to the website, in this case Harriet Carter, and at
3 the same time a context of it or at one point the
4 contents of it was transmitted as well.

5 Q. Well, let's be clear about this. I don't
6 want to quibble. I thought your testimony was quite
7 clear that the contents of communications to Moosejaw
8 are never transmitted to Navistone? Those are
9 separate communications. Is that an unfair --

10 MS. IVERSON: Objection. Yeah.

11 MR. BERTONI: Yeah, for you, but let me
12 ask my question.

13 BY MR. BERTONI:

14 Q. Correct me if I'm wrong. I thought your
15 testimony was that Navistone does not have access to
16 the content of communications between the web browser
17 and Harriet Carter. Do you want to correct me on
18 that? Am I wrong?

19 A. If you're referring to the specific
20 requests and submissions being sent to Harriet Carter
21 as an HTTP request, no, it does not have access to
22 that; but in the process of the communication being
23 assembled, it does have access to it.

24 Q. Explain that to me.

EXHIBIT 6

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IN THE UNITED STATES DISTRICT COURT FOR THE
DISTRICT OF WESTERN PENNSYLVANIA

- - - - -x

ASHLEY POPA, :
individually and on : Case No. 2:19-cv-0450-WSS
behalf of :
All others similarly :
situated, :
Plaintiffs,

-v-

HARRIET CARTER GIFTS,
INC., and
NAVISTONE, INC.,
Defendant.

- - - - -x

* CONFIDENTIAL PURSUANT TO THE PROTECTIVE ORDER *

Deposition of NAVISTONE, INC.
By and through its Corporate Representative
LAWRENCE DAVID KAVANAGH, III
Conducted Virtually
Wednesday, September 23, 2020
10:00 a.m.

Job No.: 321571
Pages: 1 - 231
Reported By: Brooklyn E. Schweitzer

1 to block cookies, then Chrome will go ahead and
2 add a cookie into its own -- into its own
3 instance.

4 Q Okay. Is that occurring on Harriet
5 Carter's website regardless of the OneTag running
6 on it?

7 A I'm sorry. Say that again?

8 Q Is that cookie placement for that
9 first-party cookie occurring on Harriet Carter's
10 website regardless of whether the OneTag was
11 placed on the website?

12 A No --

13 MR. SWETNAM-BURLAND: Objection;
14 foundation. You can answer it.

15 THE WITNESS: No. Harriet Carter controls
16 whether or not they've incorporated NaviStone's
17 OneTag or not. If Harriet Carter chooses not to
18 incorporate OneTag or removes OneTag from its
19 website, then NaviStone has no way of interacting
20 with Harriet Carter's website.

21 BY MS. IVERSON:

22 Q Okay. But my -- and I think maybe I'm not
23 using the right terminology, or maybe I'm not
24 being clear. You said that NaviStone -- the
25 OneTag could be configured to select information

1 a Neustar cookie or if -- how do they know if
2 there's a Neustar cookie on a user's browser?

3 MR. SWETNAM-BURLAND: Objection;
4 speculation.

5 THE WITNESS: I can speculate, although I
6 think this is what they actually say on their
7 website -- what Neustar says on their website, is
8 that -- or some piece of this -- that when we make
9 a call to Neustar, to the adadvisor domain, that
10 the way a browser -- the way Chrome works and all
11 browsers work is that it sends whatever data we
12 ask to that domain, and it also sends any cookies
13 that that domain has previously placed on the
14 Chrome device that the -- that the request is
15 coming from.

16 BY MS. IVERSON:

17 Q Okay. What is Exhibit 9?

18 A It looks like the contract between
19 NaviStone and Harriet Carter.

20 Q Okay. Are you familiar with this?

21 A Yes.

22 Q Okay. Does this accurately describe the
23 relationship between NaviStone and Harriet Carter?

24 A Yes. It looks like it describes one
25 service they did not use also.

1 BY MS. IVERSON:

2 Q All right. Mr. Kavanagh, do you know what
3 this is?

4 A It's still opening.

5 Yes, I think so.

6 Q What is it?

7 A It looks like the order that was placed
8 by -- looks like the Harriet Carter order.

9 Q Okay. What does SEG 1 key code 780, SEG 2
10 key code 781 mean?

11 A I could reasonably speculate. Would you
12 like me to do so?

13 Q No, I don't want you to speculate. Are
14 those NaviStone numbers?

15 A So SEG 1 and SEG 2 are NaviStone numbers.

16 Q Okay. What do SEG 1 and SEG 2 mean, then?

17 A So Segment 1 would be the highest scoring
18 names; Segment 2 would be the second highest
19 scoring names. I believe at the time we had five
20 segments, and they were grouped by engagement
21 score.

22 Q Okay. The order request, is this a
23 request to NaviStone to provide the prospects? Is
24 that what I'm understanding?

25 A Yes, it's Harriet Carter ordering a list

1 for a catalog mailing.

2 Q Okay. And are they asking for -- where it
3 says gender, are they asking for only female
4 website users?

5 A They are asking that with the -- with the
6 data that KBM Group -- you know, when we replace
7 the first and last name, what they're saying is
8 that they want to make sure that the first and
9 last name that is being replaced by KBM Group is
10 replaced with a female name.

11 Q Okay. What is "ship to," and it has a
12 crosscountrycomputer.com address?

13 A This is their CompuTech. Cross Country
14 Computer is a merge-purge processing company like
15 CompuTech. That must be the place where all of
16 the different lists were going to be sent this
17 catalog were sent to for aggregation into a much
18 larger mailing file.

19 Q Okay. And did -- would this file go from
20 Neustar to this Cross Country Computer, then, or
21 would it still go through a CompuTech process?

22 A It would go -- it would go to CompuTech,
23 and CompuTech would send that file on to Cross
24 Country Computer.

25 Q Okay. What is Elmer?

1 A In our -- in NaviStone's agreement, it --
2 and, actually, you have the original agreement.
3 We list the privacy policy -- again, we list the
4 types of things that should be included in the
5 privacy policy.

6 And so by privacy policy compliant, that
7 would mean that Harriet Carter had complied and
8 had actually done -- made the -- made the changes
9 that were required of it by contract with us.

10 Q Okay. If you go to Exhibit 35.

11 MS. IVERSON: If we can mark that, Nate.

12 A Okay. I have that one.

13 Q Have you seen this declaration before?

14 A I'm trying to think how to say this.

15 Q You don't need to have. It's fine.

16 A Okay.

17 Q Let's go to 27 at the top. They have
18 27 -- go to 27-2, which starts Exhibit B.

19 A All right. So we're on -- I'm sorry.
20 We're going -- we're not doing anything with that
21 one and going to Exhibit 27?

22 Q In this, it's, like, the third-to-last
23 page -- fourth-to-last page of this Exhibit 37.

24 MR. SWETNAM-BURLAND: Kelly, I think you
25 guys broke out the exhibits to the declaration as



Navystone® Service Agreement

This Agreement, effective August 2, 2016, (the "Effective Date") sets the terms upon which Navystone® Inc. ("Navystone"), will provide Harriet Carter Gifts, Inc. ("Client") with postal names and addresses for engaged browsers on Client's website (the "Website"), for both prospecting and reactivation purposes.

Navystone® Inc. Responsibilities:

Navystone shall:

- 1) Provide to Client a single line JavaScript to enable data capture (the "JavaScript Code"). The Client will place the JavaScript Code on every page of the Website. Navystone will work with Client's technical team to ensure proper application of the JavaScript Code;
- 2) Work with Client to determine and implement the best method for matching website browsers to Client's existing customer base, for reactivation purposes;
- 3) Perform initial quality control work to ensure that data capture is accurate and comprehensive, and that the JavaScript Code does not materially impact website performance standards as defined by Client;
- 4) Collect web browsing behavior 24x7x365 and store the collected data in a secure cloud environment;
- 5) Score all website visitors based on browsing activity to ensure that only fully engaged browsers are selected for prospecting and/or reactivation;
- 6) Provide prospecting files with postal addresses, net of house file names provided to Navystone, of web visitors that are qualified as high response prospects, for one time use by Client; and
- 7) Select qualified reactivation names from Client house file.

Client Responsibilities:

Client shall:

- 1) Install the JavaScript Code on each page of the Website;
- 2) Where reactivation services are desired, work with Navystone's technical team to determine and implement the best method for matching website browsers to Client's existing customer base;
- 3) Provide access to Google Analytics to facilitate quality control activities once the JavaScript Code is applied to the Website; and
- 4) ~~Provide Navystone a copy of Client customer file to allow for the suppression of existing Client customers from Prospect Lists;~~ *aa. 8/4/16*
- 5) Purchase a minimum of thirty thousand (30,000) prospecting or reactivation names on the terms provided in this Agreement within one hundred twenty (120) days of the start of data collection ("Purchasing Obligations").

Term and Termination: This Agreement will have a term of one (1) year from the Effective Date (the "Term") and shall automatically renew for additional one (1) year terms unless terminated by either party as provided in this Section. Upon termination, the terms of this Agreement shall terminate, except those sections that you would expect to survive termination: Use of Client Data, Intellectual Property, Limitation of Liability and Disclaimer, and Indemnification.

Either party may terminate this Agreement for any reason, effective immediately, at any time after Client has fulfilled its Purchasing Obligations.

Either party may terminate this Agreement for any reason on thirty (30) days' written notice. In the event that Client terminates this Agreement prior to fulfilling its Purchasing Obligations, Client will immediately owe to NaviStone® the full amount that NaviStone would be due if Client had fulfilled its Purchasing Obligations.

Upon termination or expiration of this Agreement, NaviStone® will archive all Client Data on NaviStone's cloud servers for a period of thirty (30) days prior to deleting all Client Data in its possession.

Pricing and Terms:

Client shall purchase names for prospecting or for reactivation for one time use at a rate of \$70 per thousand names shipped. Client will promptly provide to NaviStone®, for the purpose of invoicing, a copy of their merge purge results. NaviStone will invoice Client net of Client house file names and Client "do not mail" suppression files.

Client shall purchase a minimum of 10,000 names per order.

In its sole discretion, Client may purchase browsing data for Client's existing customers for 24 months unlimited use at a rate of \$240 per thousand names.

Client will be billed on the scheduled mail date, and all payments become due fifteen (15) days after scheduled Client mail date. If payment is not received within fifteen (15) days of the due date, Client will owe a service fee of 2% of the overdue invoice. Client will be charged an additional fee of 2% for each additional month the invoice remains unpaid.

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Pricing is subject to change at the sole discretion of NaviStone. NaviStone will provide Client thirty (30) days' notice prior to any price increase.

Payment of any sales taxes, whether billed at the time of service or that may be imposed by a taxing authority at a later time, are the responsibility of the Client.

Use of Client Data:

NaviStone shall use Client Data solely to perform its obligations pursuant to this Agreement or pursuant to any other written arrangement with Client. NaviStone shall not disclose Client Data to any third party except as reasonably required for NaviStone to provide its obligations under this Agreement or as required by law or court order. NaviStone will take the same care regarding Client data as it does with its own proprietary data.

Intellectual Property:

All trademarks, patents, copyrights and other intellectual property rights owned by either party on the date of this Agreement, including without limitations all rights to the JavaScript Code, shall continue to be owned solely by such party, and nothing herein shall be deemed to confer any rights to any intellectual property on the other party except as expressly set forth herein or in other written agreements between the parties. Client maintains ownership of its web browsing data maintained on their behalf by NaviStone.

Limitation of Liability and Disclaimer:

In no event shall NaviStone's total liability under this agreement exceed the amount paid by Client to NaviStone during the six months prior to the incident giving rise to liability.

NAVISTONE MAY NOT BE HELD LIABLE TO CLIENT, OR TO ANY THIRD PARTY, FOR ANY INDIRECT, INCIDENTAL, SPECIAL, CONSEQUENTIAL, EXEMPLARY OR PUNITIVE DAMAGES (INCLUDING LOST OR ANTICIPATED REVENUES OR PROFITS) ARISING FROM ANY CLAIM RELATING DIRECTLY OR INDIRECTLY TO THE AGREEMENT, WHETHER BASED ON WARRANTY, CONTRACT OR TORT (WHETHER UNDER A THEORY OF NEGLIGENCE, STRICT LIABILITY OR OTHERWISE), EVEN IF AN AUTHORIZED REPRESENTATIVE OF NAVISTONE IS ADVISED OF THE LIKELIHOOD OR POSSIBILITY THEREOF. CLIENT ACKNOWLEDGES THAT NAVISTONE HAS RELIED UPON THE LIMITATIONS ON LIABILITY SET FORTH IN THIS AND, BUT FOR THEIR INCLUSION HEREIN, WOULD NOT HAVE ENTERED INTO THE AGREEMENT.

JAVASCRIPT CODE AND OTHER SERVICES ARE PROVIDED BY NAVISTONE® ON AN "AS-IS" BASIS. ALL OTHER WARRANTIES, WHETHER ORAL OR WRITTEN, EXPRESS OR IMPLIED OR CONTRACTUAL OR STATUTORY, ARE EXPRESSLY DISCLAIMED. THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE SPECIFICALLY DISCLAIMED.

Mutual Indemnification of Both Parties:

To the extent not prohibited by law, each party will forever indemnify, defend, and hold the other party and its subsidiaries, affiliates, related companies, officers, directors, employees, agents, representatives, partners, and licensors (the "Entities") harmless from and against any and all liabilities, damages, losses, claims, costs and expenses (including attorneys' fees) related to: (i) either party's violation of any applicable federal, state or local laws, regulations, rules and judicial and administrative decisions, including any applicable privacy and data protection laws (ii) either party's violation of any applicable privacy policy or any other privacy or confidentiality rights of any third party; (iii) a third-party claim of misappropriation or infringement of any intellectual property right in connection with either party's use of any of the other party's Data in accordance with this Agreement; and (iv) any misrepresentation by either party to the other.

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Client is responsible for ensuring that it is in full compliance with all applicable laws and marketing regulations regarding the privacy of its customers and the collection, use and disclosure of its customers' information.

Client expressly warrants that the Website includes a clear and conspicuous link to its privacy policy on its customer-facing web page which will contain a provision substantially similar to the following:

"We may from time to time contract with third party vendors to serve ads to our customers on our behalf across the Internet or to send our catalogs to customers whom we think may be interested in our products or services. To do this, the vendors will collect anonymous information about your visits to our Web site and your interaction with our products and services. This anonymous information is collected through the use of a cookie or pixel tag – industry standard technology used by most major Web sites. No personally identifiable information is collected in this process. They may also pool the anonymous information that they collect with other sources of information not collected during your visit to our website, which may include your name and mailing address, for purposes of determining whether you might be interested in receiving a catalog.

If you do not wish for cookies or pixel tags to be placed on your computer, most commercially available web browsers permit you to prevent that from taking place. To opt-out of receiving our catalogs, you may send

us an email at [CLIENT CUSTOMER SERVICE EMAIL ADDRESS] or call us at [CLIENT CUSTOMER SERVICE PHONE NUMBER]"

NaviStone® will notify Client if it becomes aware of any changes in law that will require modifications to the above suggested privacy language.

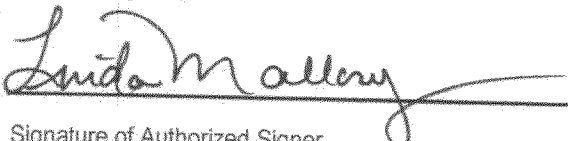

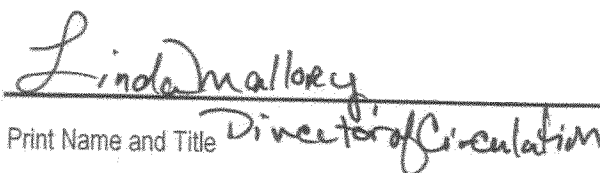



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This Agreement and any action related thereto will be governed by the laws of the State of Pennsylvania without regard to or application of its conflict of law provisions or your state or country of residence.

Any disputes that arise under or in relation to this Agreement shall be resolved in the state and federal courts of the state of Pennsylvania. NaviStone expressly consents to personal jurisdiction of and venue in such courts and waives any objection as to inconvenient forum.

Acceptance:

The undersigned hereby represent that they are duly authorized to execute this Agreement on behalf of their respective organizations.

Harriet Carter Gifts, Inc. 425 Stump Road Montgomeryville, PA 18936	NaviStone® Inc. 1308 Race Street Cincinnati, OH 45202
	
Signature of Authorized Signer	Signature of Authorized Signer
	
Print Name and Title	Print Name and Title
	
Date	Date

NaviStone® Order Request	
Order Request Date	9/26/2016
Client	Harriet Carter
House or Prospect	Prospect
Cutoff Date	10/6/2016
xref File (Expecting New or Use Existing)	
Client ID	
Order #	
Order Date	
Planned Qty	20000
Order Qty	45000
Gender	Female
Keycode(s)	See notes
Category Selects	None
Segmentation Instructions	See notes
Special Instructions (shipping, billing)	See notes
Ship To (if new client and not already on Computech Document)	epolansky@crosscountrycomputer.com
Qty from Elmer to Computech	
Elmer to Computech Ship Date	
Qty from Computech to Client	
Ship Date	
Invoice Req Date	
Invoice Qty	
Invoice Amt	

NaviStone Operations -
place order date:

9/29/2016

Notes

Pull top 25,000 scored names

Split in 2, 50/50

Seg 1 Keycode = 780

Seg 2 Keycode = 781

NaviStone® Invoice Request

Client to be invoiced	Harriet Carter
Request Date	10/4/2016
Ship Date	10/4/2016

[illegible]

Invoice Subtotal	\$ 1,640.24
Tax Rate	0.00%
Sales Tax	-
Other	
Deposit Received	
TOTAL	\$ 1,640.24

EXHIBIT 7

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IN THE UNITED STATES DISTRICT COURT FOR THE
DISTRICT OF WESTERN PENNSYLVANIA

- - - - -x

ASHLEY POPA, :
individually and on : Case No. 2:19-cv-0450-WSS
behalf of :
All others similarly :
situated, :
Plaintiffs,

-v-

HARRIET CARTER GIFTS,
INC., and
NAVISTONE, INC.,
Defendant.

- - - - -x

Deposition of HARRIET CARTER GIFTS, INC.,
By and through its Corporate Designee
WILLIAM GARBOSE
Conducted Virtually
Friday, October 2, 2020
9:57 a.m.

Job No.: 325479
Pages: 1 - 130
Reported By: Brooklyn E. Schweitzer

1 Q And, as I understand it, you asked Mary
2 Ellen to talk with Allen Abbott directly about
3 NaviStone's product?

4 A Yes.

5 Q Okay.

6 MS. IVERSON: Let's go to Exhibit 53,
7 please, Liz.

8 (Exhibit 53 was marked for identification
9 and is attached to the transcript.)

10 BY MS. IVERSON:

11 Q Do you know if anyone other than Mary
12 Ellen and Linda and yourself were involved in
13 communications with NaviStone prior to entering
14 into the contract with NaviStone?

15 A I don't believe anyone else would have
16 been.

17 Q All right. Exhibit 53 is Bates Nos.
18 HCG_52 through 55. Do you recognize this?

19 A Yes.

20 Q What is it?

21 A It's --

22 MS. SLYE: Liz, do you want to scroll
23 down? Sorry, didn't mean to interrupt you, Bill.
24 I think we probably all know what it is, but just
25 to be sure.

1 THE WITNESS: It's the contract that we
2 signed with NaviStone to test their product.

3 BY MS. IVERSON:

4 Q Did you review this contract before it was
5 signed?

6 A No.

7 Q Do you know if there were multiple -- let
8 me strike that.

9 Do you know, were there other drafts of
10 this contract going through the negotiation
11 process, unsigned drafts?

12 A I don't know.

13 Q Did you look for any other drafts of this
14 contract?

15 A I would have looked for everything
16 associated with -- with NaviStone, and I don't
17 recall seeing a draft contract.

18 Q Okay. The contract with NaviStone
19 indicates that NaviStone -- this is under
20 Part 2 -- "NaviStone shall work with client to
21 determine and implement the best method for
22 matching website browsers to client's existing
23 customer base for reactivation purposes."

24 Is that a service that NaviStone performed
25 for Harriet Carter?

1 Q Okay. At some point, did Harriet Carter
2 terminate this agreement with NaviStone?

3 A The understanding was that this was a test
4 of NaviStone's product. I don't recall if I said
5 this earlier, but in the course of a year, we may
6 test upwards -- we may have, past tense -- tested
7 upwards of 1,000 different lists or segments of
8 lists.

9 And so this was a test of their product,
10 and we -- we tested it through one mailing. I
11 believe it was a mailing in either October or
12 November of 2016. The test was a failure in that
13 the sales generated by the names provided to us by
14 NaviStone did not produce a sufficient return on
15 investment.

16 And so we never went any further with
17 NaviStone with the product. We tested it in the
18 one mailing; it didn't work; it failed, and we
19 discontinued our use of the -- of NaviStone and
20 never received anything else from them after that
21 one-time usage.

22 Q Okay. I just want to make sure I
23 understand your answer. I think my question was
24 did Harriet Carter ever terminate this agreement
25 with NaviStone?

1 A I'm not sure -- we did not continue with
2 NaviStone. In our industry, when one tests a
3 list, it either works or it doesn't, and if it
4 doesn't, you tell the list that it didn't work and
5 you don't go any further. And that's something
6 that Linda would have communicated to NaviStone,
7 that the product didn't work.

8 And so there was -- to my knowledge, there
9 was no written, formal termination notice. That's
10 something that may have occurred on the telephone
11 between NaviStone -- between Harriet Carter and
12 NaviStone.

13 Q When did Harriet Carter terminate the
14 contract on the telephone with NaviStone?

15 A I don't know specifically. We would have
16 indicated to them probably in November of 2016 --
17 November, perhaps, or December of 2016, that the
18 product didn't work as they suggested -- didn't
19 work with us as they had indicated it might,
20 and -- and so we would have told them we would not
21 continue with it.

22 Q Okay. You're using a lot of "mays"
23 and "would haves" here, Mr. Garbose. Is this --
24 do you know that a conversation occurred between
25 NaviStone, or is this something you're speculating

1 It's the Excel spreadsheet, Liz. And this is
2 marked Exhibit 22, Brooklyn, because it was
3 entered in the Kavanagh deposition, and so we're
4 using the same exhibit numbers.

5 (Exhibit 22 was previously marked for
6 identification and is attached to the transcript.)

7 BY MS. IVERSON:

8 Q Mr. Garbose, have you seen this before?

9 A I don't believe so, no.

10 Q Okay. And that's fair. This is a
11 document that was produced by NaviStone.

12 MS. IVERSON: And, Liz, just so he sees
13 the whole thing, there's order template at the
14 bottom and then an invoice --

15 Q -- which I do think you had -- that
16 Harriet Carter had the ultimate copy of that
17 invoice in their production. Do you recognize
18 that?

19 A I don't specifically remember it. I don't
20 recollect it, but I -- they would have billed us.
21 In the ordinary course of business, they would
22 have billed us, and we would have had a copy of
23 that bill and paid against it.

24 Q Okay. Back to the order template. Does
25 this September 26th, 2016, order date comport with

1 your understanding of the order that Harriet
2 Carter placed with NaviStone?

3 A It seems consistent.

4 Q Down here, how -- what do you understand
5 occurred with the process for NaviStone to provide
6 the prospects and those prospects to then be sent
7 in mailers? Can you walk through that process
8 with me?

9 A Yes. Back to -- I'm not going to refer --
10 well, the NaviStone document that we went over a
11 few moments ago, that chart indicated how
12 NaviStone would come up with potential
13 customers -- potential prospects, if you will --
14 for us to mail the catalog to.

15 They would have provided that list to us
16 approximately -- I think from that invoice, it
17 looks like about 23,000 or so names, which would
18 comport with -- a typical test cell for us would
19 be 25,000 names, so that does seem consistent.
20 They would provide us with something around that.

21 And the computer -- well, they used to be
22 tapes, but now it's sent digitally. Those names
23 would have been sent to our merge-purge house to
24 be put into a mail list -- mailing list for a
25 subsequent mailing.



NaviStone® Service Agreement

This Agreement, effective August 2, 2016, (the "Effective Date") sets the terms upon which NaviStone® Inc. ("NaviStone"), will provide Harriet Carter Gifts, Inc. ("Client") with postal names and addresses for engaged browsers on Client's website (the "Website"), for both prospecting and reactivation purposes.

NaviStone® Inc. Responsibilities:

NaviStone shall:

- 1) Provide to Client a single line JavaScript to enable data capture (the "JavaScript Code"). The Client will place the JavaScript Code on every page of the Website. NaviStone will work with Client's technical team to ensure proper application of the JavaScript Code;
- 2) Work with Client to determine and implement the best method for matching website browsers to Client's existing customer base, for reactivation purposes;
- 3) Perform initial quality control work to ensure that data capture is accurate and comprehensive, and that the JavaScript Code does not materially impact website performance standards as defined by Client,;
- 4) Collect web browsing behavior 24x7x365 and store the collected data in a secure cloud environment;
- 5) Score all website visitors based on browsing activity to ensure that only fully engaged browsers are selected for prospecting and/or reactivation;
- 6) Provide prospecting files with postal addresses, net of house file names provided to NaviStone, of web visitors that are qualified as high response prospects, for one time use by Client; and
- 7) Select qualified reactivation names from Client house file.

Client Responsibilities:

Client shall:

- 1) Install the JavaScript Code on each page of the Website;
- 2) Where reactivation services are desired, work with NaviStone's technical team to determine and implement the best method for matching website browsers to Client's existing customer base;
- 3) Provide access to Google Analytics to facilitate quality control activities once the JavaScript Code is applied to the Website; and
- 4) ~~Provide NaviStone a copy of Client customer file to allow for the suppression of existing Client customers from Prospect Lists;~~ *dd. 8/4/16*
- 5) Purchase a minimum of thirty thousand (30,000) prospecting or reactivation names on the terms provided in this Agreement within one hundred twenty (120) days of the start of data collection ("Purchasing Obligations").

Term and Termination: This Agreement will have a term of one (1) year from the Effective Date (the "Term") and shall automatically renew for additional one (1) year terms unless terminated by either party as provided in this Section. Upon termination, the terms of this Agreement shall terminate, except those sections that you would expect to survive termination: Use of Client Data, Intellectual Property, Limitation of Liability and Disclaimer, and Indemnification.

Either party may terminate this Agreement for any reason, effective immediately, at any time after Client has fulfilled its Purchasing Obligations.

Either party may terminate this Agreement for any reason on thirty (30) days' written notice. In the event that Client terminates this Agreement prior to fulfilling its Purchasing Obligations, Client will immediately owe to NaviStone® the full amount that NaviStone would be due if Client had fulfilled its Purchasing Obligations.

Upon termination or expiration of this Agreement, NaviStone® will archive all Client Data on NaviStone's cloud servers for a period of thirty (30) days prior to deleting all Client Data in its possession.

Pricing and Terms:

Client shall purchase names for prospecting or for reactivation for one time use at a rate of \$70 per thousand names shipped. Client will promptly provide to NaviStone®, for the purpose of invoicing, a copy of their merge purge results. NaviStone will invoice Client net of Client house file names and Client "do not mail" suppression files.

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Intellectual Property:

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To the extent not prohibited by law, each party will forever indemnify, defend, and hold the other party and its subsidiaries, affiliates, related companies, officers, directors, employees, agents, representatives, partners, and licensors (the "Entities") harmless from and against any and all liabilities, damages, losses, claims, costs and expenses (including attorneys' fees) related to: (i) either party's violation of any applicable federal, state or local laws, regulations, rules and judicial and administrative decisions, including any applicable privacy and data protection laws; (ii) either party's violation of any applicable privacy policy or any other privacy or confidentiality rights of any third party; (iii) a third-party claim of misappropriation or infringement of any intellectual property right in connection with either party's use of any of the other party's Data in accordance with this Agreement; and (iv) any misrepresentation by either party to the other.

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If you do not wish for cookies or pixel tags to be placed on your computer, most commercially available web browsers permit you to prevent that from taking place. To opt-out of receiving our catalogs, you may send

us an email at [CLIENT CUSTOMER SERVICE EMAIL ADDRESS] or call us at [CLIENT CUSTOMER SERVICE PHONE NUMBER]"

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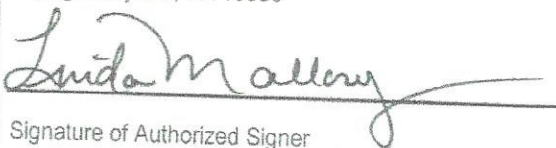
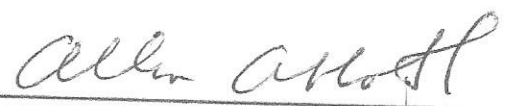
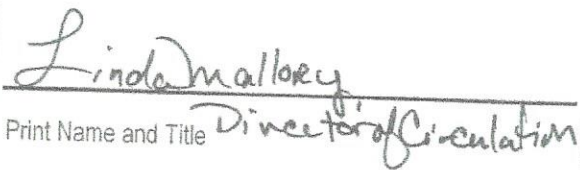
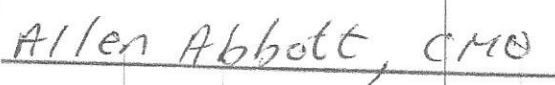
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Harriet Carter Gifts, Inc. 425 Stump Road Montgomeryville, PA 18936	NaviStone® Inc. 1308 Race Street Cincinnati, OH 45202
	
Signature of Authorized Signer	Signature of Authorized Signer
	
Print Name and Title	Print Name and Title
8-3-2016	8-4-16
Date	Date